FEDERAL PATENT POLICY

JOINT HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

AND THE

COMMITTEE ON SCIENCE AND TECHNOLOGY U.S. HOUSE OF REPRESENTATIVES

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FEDERAL PATENT POLICY

WEDNESDAY, SEPTEMBER 30, 1981

U.S. SENATE, COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION; HOUSE OF REPRESENTATIVES, COMMITTEE ON SCIENCE AND TECHNOLOGY,

Washington, D.C.

The committees met at 9:25 a.m. in room 235 of the Russell Senate Office Building, Hon. Harrison Schmitt and Hon. Allen E. Ertel presiding.

OPENING STATEMENT BY SENATOR SCHMITT

Senator SCHMITT [presiding]. I would like to welcome our distinguished colleague from the House today, as well as Senator Long, for another round of hearings on the question of Federal patent policy. Both the House Committee on Science and Technology and our Committee on Commerce, Science, and Transportation have been working diligently toward reforming Federal patent policy for many years, and I think we're getting close, as witnessed by the bills that are before us today, and the increasing area of agreement that the House and Senate members are reaching.

Consideration of these bills is one step toward a common goal of our committee, which is to stimulate this Nation's faltering leadership in technological innovation and economic productivity.

Although implementing a uniform patent policy is just one step toward that goal, I believe it is a critical one that will pay large benefits to all Americans. Billions of dollars are spent yearly by the Government supporting research and development, about $1 billion a year in my own home State of New Mexico. In this last fiscal year alone, $35 billion was invested nationally.

If this is truly to be an investment intended to pay dividends, it is time to reexamine our approach to patents, to insure that we do not waste these resources, once they have been invested.

The technology generated through Government-supported R. & D. is the seed for the growth of future businesses, many as yet unimagined. Our present policies retard the growth of these seed technologies, hurting not only ourselves, but the Nation's future generations and must be modified.

The bills under consideration today have some differences, and we are soliciting comment on them. Yet the thrust of the bills is basically identical. We propose to extend title to inventions developed under Federal R. & D. contracts to not only small businesses, nonprofit organizations, and universities, but to all contractors, regardless of size.

The Government would retain title to these inventions in certain specific situations and would be able to march in on those who fail

to take reasonable and timely steps to commercialize their inventions. The American public, I believe, deserves a better payoff on their investment in R. & D. than they presently enjoy.

Without the incentive to bring inventions developed under Federal R. & D. contracts to the marketplace, the potential payoffs on our national investment will continue to go unrealized.

The time, I feel, for debate, is over. The time for action is now, and I hope we can move ahead.

Congressman, would you care to give a statement?

OPENING STATEMENT BY REPRESENTATIVE ERTEL

Mr. ERTEL. Thank you, Senator Schmitt.

I agree wholeheartedly that the time to go forward is now. I appreciate your cooperation with the House. Working together, we can move forward with a uniform patent policy, reversing this Nation's downward trend in productivity and spurring new innovation. These are important goals which require a concerted and coordinated effort.

I believe that today's hearing represents a step in that overall endeavor. Our patent system was developed to provide inventors with the necessary protection to encourage commercialization of inventions. It was also developed to place information on new processes and technologies in the public record, so that others could build on new advances. When understood in this light, present Government patent policy is only doing half its job. While inventions are disclosed, we have failed to provide inventors of the patents which arise under Federal research and development contracts, with the necessary incentive to commercialize that patent and bring it to the marketplace where the American public can benefit from the invention.

I'm pleased to have had the opportunity to work with Senator Schmitt to introduce legislation which will correct the shortcoming of our Government patent policy. Essentially, both of our bills provide the contractor who develops a patentable invention the right, under certain conditions, to obtain title to that invention, if he will take steps to commercialize his patent.

I'm looking forward to continuing the satisfying and productive relationship with Senator Schmitt, as we work toward this common goal. I appreciate the House Science and Technology and the Senate Commerce, Science, and Transportation Committees for holding this hearing so quickly after the bills have been introduced.

I also appreciate the support of the Members of Congress who have cosponsored these bills. One of those cosponsors, Congressman Don Fuqua, chairman of the House Science and Technology Committee, wanted to attend this hearing but, unfortunately, is unable to do so. He has asked me, however, to submit his statement for the record.

Let me thank the distinguished witnesses that are testifying here today for the time and effort on fairly short notice. Their contributions will help to make the hearing today a useful and enlightening one. I hope we'll be able to continue moving on these bills in a timely manner.

It now seems possible that we might be able to end about 30 years of debate on Government patent policy during this Congress.

Thank you, Senator Schmitt.

[The statement follows:]

OPENING STATEMENT BY HON. DON FUQUA, CHAIRMAN, HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY

I am indeed honored to be a part of this joint hearing of the House Committee on Science and Technology and the Senate Committee on Commerce, Science, and Transportation to examine Federal patent policy. Today we are considering two patent bills which, with bipartisan support, can make substantial improvements in Federal patent policy.

The House Committee on Science and Technology has been involved in the shaping of patent legislation since 1976, when the Committee released a report entitled, "Background Materials on Government Patent Policies—The Ownership of Inventions Resulting from Federally-Funded Research and Development." In the 97th Congress, the Science Committee will continue efforts to spur greater innovation and productivity in the economy by bringing the fruits of our Federal research and development to the market in the form of tangible goods and services to benefit the American people.

The 96th Congress saw a great deal of legislative action on improving Federal patent policy. H.R. 5715, the uniform Federal patent policy bill introduced by my colleague, The Honorable Allen Ertel, was reported by the Science, Research and Technology Subcommittee of the Committee on Science and Technology. But it was never considered by the full Committee because action was being taken in the House Judiciary Committee on a broader patent bill (H.R. 6933) which included uniform Federal patent policy as one title. The broader bill was passed and is now Public Law 96-517. This law gives universities and small businesses the right to retain the rights to inventions made with Federal support (with some restrictions) but does not give this right to larger businesses. I favor extending this law to cover larger businesses.

Last Congress Senator Schmitt also introduced legislation which would have allowed larger businesses to retain patent rights. Legislative action was not completed on this proposal, however.

In this Congress, Mr. Schmitt and Mr. Ertel have again introduced bills that, under most circumstances, would allow the contractor under a Federal contract the option of retaining title to any invention made under the contract. S. 1657 and H.R. 4564 seek to establish a uniform Federal patent policy. In addition the bills would make the benefits of Federal R&D programs widely available in the shortest practicable time; promote commercial utilization of inventions in order to maximize our productivity and innovation; and encourage the participation of the most qualified firms or institutions in Federal R&D. Mr. Ertel's bill also requires contractors who are granted title to inventions they developed under Federal research and development contracts to provide payments to the government through the sharing of royalties and/or revenues in return for the original Federal investment. I commend Sen. Schmitt and Rep. Ertel on the introduction of the bills, and I look forward to working with them to get uniform patent legislation passed.

Currently, Federal patents are controlled by approximately 26 statutes applying to different agencies and programs and by Presidential patent policies in all situations not covered by statute. Under this system a contractor's rights may differ not only from agency to agency, but from department to department within an agency. This is a disincentive to firms which may be interested in commercializing a federally held patent. It is crucial that we work for a uniform patent policy. I see this hearing as another significant step toward reaching this goal.

Senator SCHMITT. Thank you. Senator Long.

OPENING STATEMENT BY SENATOR LONG

Senator LONG. Mr. Chairman, although the subject of these hearings has been advertised as Government patent policy, it should be recognized that it is a misnomer. It is not a patent problem at all. It is not concerned with the administration of the Patent Office. The subject we are dealing with involves the disposition of the

public's property rights arising out of the huge expenditures of public funds.

The sponsors of S. 1657 make the following criticisms of current Federal policy with respect to the allocation of rights to the results of federally sponsored research and development. They claim current law is inconsistent, deters contractor participation in Government contracts, delays technological progress, stifles the innovative process, and in some way or another is a major factor in the steady decline in U.S. productivity.

With the exception of the allegations of inconsistency, there has not been even a shred of evidence to support these claims.

Since the end of World War II there has been a phenomenal increase in the amount of research and development, and there has been a tremendous growth in the application of science to industry. The changes going on in the areas of electronics, atomic energy, and automation are in many respects different in kind from any that occurred before, and will change the world much more.

The needs of World War II stimulated organized scientific research. We made an atomic bomb; we replaced natural rubber; and we made great technological achievements in radar and antibiotics.

Many new products, the results of research, helped push the economy upward during the first decade after World War II. Transistors, power steering, power brakes, antibiotics, polyethylene, styrene plastics and resins, vitamins, synthetic detergents, grew more than 40 percent per year during that decade. Synthetic fibers, room air-conditioners, tape recorders, grew from 30 to 40 percent. Technological progress has been playing a major role in propelling the economy forward, especially since the middle of the 18th century. The new element in our society is the growing recognition that new products and new processes are the key to a company's growth, an industry's growth, a nation's growth—and these are dependent on the continuous development of innovations to keep the economic system expanding. As research has grown, its influence on profitability has also grown to the point where it now either determines or strongly influences the profit performance of many segments of industry.

GOVERNMENT RESEARCH AND DEVELOPMENT

The size of these expenditures is a new phenomenon. In 1940, they were less than $7.5 million; by 1950 they were about $1 billion; by 1958 they were nearly $5 billion; and from then on they increased rapidly year by year.

At the present time, the Federal Government is spending at the rate of $35 billion annually on research and development. This constitutes about 60 percent of the research in the United States. This percentage figure tells only part of the story, for in certain industries the Government pays for the major part of the research performed.

ROLE OF GOVERNMENT R. & D. IN THE CIVILIAN SECTOR

Government expenditures for research and development have an important impact on the creation, development, and allocation of our national resources. Military and space research and develop-

ment, which in dollar terms is 70 to 80 percent of all Government-financed research, is concerned—like all other research—with obtaining new knowledge and producing new techniques and products. Although these are concerned with military needs, these actions have civilian applications.

We must recognize the degree to which military research and development is applied to civilian enterprise, and the degree to which it affects the country's resources and its economic development. Throughout the years, many civilian products and techniques have been the direct result of military and space expenditures. Some well-known and often-cited examples are yellow fever eradication, chlorination of water, nuclear power, modern aircraft, helicopters, space communications, new high temperature alloys, aircraft engines, silicon transistors, new automobile power steering and suspension systems, anti-icing equipment, battery powered hand tools, chemical processing equipment and so on. In those cases where large sums of money are needed and where private industry will not willingly gamble in the absence of the prospect of a short-run payoff, the Government plays a very important role in bringing about innovations much earlier than might normally be the case.

Since the U.S. Government finances a very large part of all research and development performed by industry and since a large part of Government-financed research is devoted to pushing forward the frontiers of knowledge, it can be seen that Government activities in this field have an exceedingly important and direct impact on the growth of our economy and its market structure. The channeling of research and development funds into an industry can insure its expansion and prosperity; the withholding of such funds can stifle or retard its growth.

Similarly, the awarding of research contracts to particular corporations, especially in trial-blazing developments, confers incalculable advantages in know-how which generally presages the growth, domination, or competitive superiority in these or related fields.

DISPOSITION OF GOVERNMENT RIGHTS

The disposition of rights resulting from Government research and development can increase monopoly and the concentration of economic power or, alternatively, can spread the resulting benefits throughout our society with consequent benefit to the maintenance of a competitive free enterprise system and more rapid economic growth. With the recently adopted exception of small business and universities, the Congress has always recognized these principles and whenever it has spoken, has always provided that the U.S. Government should acquire title and full right of use and disposition of scientific and technical information obtained and inventions made at its direction and its expense. In some cases these rights are subject to waiver of Government title when the equities of the situation so require. the basic premise is that inventions should belong to those who pay to have them created, and Congress has stated on numerous occasions that title should be taken by the United States for the benefit of all the people of the United States if made in the performance of a Government contract. Despite the

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vigorous opposition from industry groups and from the organized patent bar, Congress has applied this principle to the following agencies of Government:

The Atomic Energy Commission, the Department of Agriculture, the Tennessee Valley Authority, the National Aeronautics and Space Administration, the Office of Coal Research and Development, the Department of Health, Education, and Welfare, the Veterans' Administration. In addition, what came to be known as the Long amendment is an integral part of a host of laws, such as the Federal Coal Mine Health and Safety Act of 1969, the National Traffic and Motor Vehicle Safety Act; the Helium Act Amendment of 1960; the Solid Waste Disposal Act; the Disarmament Act; the Saline Water Act; the Solar Energy Act, and others. The purpose was to insure that no research would be contracted for, sponsored, cosponsored, or authorized under authority of a particular piece of legislation unless all information, uses, products, processes, patents, and other developments resulting from such research will be available to the general public. Only a few years ago, former Senator Nelson and I convinced the Senate that such a provision should be included in the Energy Research and Development Act.

Now S. 1657 has been introduced.

Specifically, it proposes to grant title and thereby exclusive commercial rights to such inventions to all contractors, large and small, except where the contracting agency specifically retains such title for the Government when the contract is drawn.

It repeals Public Law 96-517, passed by the Congress in November of last year. This legislation, thoroughly debated in the House and Senate, allowed small business, universities, and nonprofit organizations to retain title to patents resulting from federally financed research. This special preference was granted to encourage the most innovative and productive segments of our economy to become even more involved in research and developmental activities.

Furthermore, the issue on extending this giveaway of public right to large business was specifically rejected by the Senate on February 6, 1980. After thorough debate between Senator Schmitt and myself, the full Senate voted 60 to 34, almost 2 to 1, to reject the concept that big business should automatically be granted these patent rights. This preferential treatment of small businesses, universities, and nonprofit organizations was subsequently upheld by the House of Representatives. For this reason, I decided not to attempt any further amendments or delaying efforts. Now, less than 1 year after enactment of major legislation in this field, the issue is before the Congress once again.

Proponents of S. 1657 urge enactment of a "uniform" patent giveaway policy. I believe they are urging one that is uniformly bad.

Proponents of this bill point to a number of rights retained by the Government to protect the public interest. The exercise of such rights by agencies would not be a simple matter, particularly where administrative hearings and de novo judicial review would be involved. For example, trying to show that exclusive rights to an invention in the contract have "tended substantially to lessen competition or to result in undue market concentration in any section

of the United States in any line of commerce to which the technology relates" would be tantamount to getting involved in a miniature Clayton Act—section 7 trial.

An agency would have no real assurance of the outcome of its attempted exercise of "march-in" rights, nor indeed, the potential investment of time and resources that such would entail. Given the costs involved, the numbers of patents that might be involved, and the varying interests and expertise of the many Federal agencies in the areas of public interest described in the "march-in" provisions, I think it unrealistic to assume that the public interest would be adequately protected, assuming even the highest motivation on the part of all concerned.

Finally, the time delays inherent in any ultimately successful exercise of "march-in" rights in a really important case could well be intolerable.

The Department of Justice for the last 30 years has vigorously supported the view that the results of publicly financed research and development should benefit the public. The basic reasons given are:

First, when public moneys are expended, public as a whole should benefit, as it would from the availability of nonexclusive, nondiscriminatory licenses to qualified applicants, resulting in maximization of the invention's use and implementation.

Second, there is serious question as to whether any worthwhile purpose would be served by giving a contractor the right to exclude competitors from patentable inventions arising out of Government-financed research. Rather, such rights may be in the nature of a windfall, at public expense, to a contractor whose contract price does not (and may not be able to) take account of speculative invention and patent possibilities. When the Government underwrites R. & D. risks, the Government—that is the public—should be entitled to any invention rewards.

Third, there has been no convincing showing that exclusive rights in Government-financed inventions need be granted to contractors in order to induce them to accept Government R. & D. contracts, which themselves confer many benefits beyond the simple contract price.

In the United States, patents have traditionally been held out as an incentive "to promote the progress of science and the useful arts"—an incentive to private persons, willing to assume the necessary risks to earn the stipulated reward. They were never intended to reward persons who perform research at someone else's expense as part of a riskless venture. Therefore, as Prof. Wassily Leontief, a Nobel Laureate, points, out to allow contractors to retain patents on research financed by and performed for the Government "is no more reasonable or economically sound than to bestow on contractors who build a road financed by public funds, the right to collect tolls from cars that will eventually use it" or the right to close down the road altogether.

Extensive hearings held by the Senate Small Business Committee's Monopoly Subcommittee while I was its chairman and then under Senator Nelson's chairmanship, inevitably led to the conclusion that the provisions of this bill are deleterious to the public interest. Witnesses at these hearings, which started as far back as

December 1959, included distinguished economists, a Deputy Attorney General of the United States, an Assistant Attorney General in charge of the Antitrust Division of the Justice Department, two Chairmen of the Federal Trade Commission and former staff members of the Council of Economic Advisers.

Without any exception these witnesses testified that when a private company finances its own research and development, it takes a risk and deserves exclusive right to the fruit of that risk. Government research and development contracts, however, are generally cost-plus with an assured market—the U.S. Government. There is, thus, absolutely no reason why the taxpayer should be forced to subsidize a private monopoly and have to pay twice: first for the research and development and then through monopoly prices. When a contractor hires an employee or an agent to do research for him the standard common law rule is that the contractor gets the invention. Surely the Government should have no less a right.

In addition to the problem of equity, economic growth and increased productivity require the most rapid dissemination of scientific and technical knowledge. Allowing private firms to file private patents would do just the opposite.

This bill would promote monopoly and concentration of economic and political power.

It would hamper the rapid dissemination of scientific and technological information and hence will retard economic growth and increased productivity.

This proposed legislation is one of the most radical, far-reaching giveways that I have seen in the many years that I have been a member of the U.S. Senate.

I hope the members of this committee will vote against this bill.

Mr. Chairman, I will have to go to the Senate floor to participate in the debate on the social security bill that is pending over there, or at least it will be up in short order, and I would like to ask the Senator if it's possible for this committee to permit Admiral Rickover to be called first while I'm here, because I would like to be present to hear Admiral Rickover's statement.

Senator SCHMITT. Do you have any objections?

Mr. ERTEL. I have no objections.

Senator LONG. I appreciate it.

Mr. ERTEL. Mr. Chairman, I'd like to point out we've been joined by another member of our committee, Congressman Dunn from Michigan.

Senator SCHMITT. Welcome. Do you have an opening statement?

Mr. DUNN. No statement.

Senator SCHMITT. Without objection, we will ask Admiral Rickover to come forward and give a statement.

Admiral, as with all the witnesses, if you wish to summarize your statement, so that there's time for questions, that would be acceptable to the committee. Your entire statement will be printed in the record as submitted to the committee.

Admiral, it's good to see you again with us. It's been a little over a year, I believe, since we had a chance to talk these things over. Would you please proceed.

STATEMENT OF ADM. HYMAN G. RICKOVER, DEPARTMENT OF THE NAVY, NAVAL SEA SYSTEMS COMMAND, ACCOMPANIED BY THOMAS L. FOSTER

Admiral RICKOVER. Thank you, Mr. Chairman. I very much appreciate the request by Senator Long to testify right now. My first testimony in Congress on patents was before Senator Long's committee, and I don't know whether I should say this, but I think that as far as trying to take care of the people of this country, he is following in the footsteps of his father.

How's that, Senator?

Senator LONG. Thank you.

Admiral RICKOVER. I hope you don't object to that statement?

Senator LONG. Thank you, sir, I appreciate it.

Admiral RICKOVER. For the past quarter of a century, various bills have been introduced in Congress proposing to give large Government contractors monopoly rights to inventions they develop at Government expense. These bills are proposed in the name of promoting technology, productivity, and economic growth for the Nation. Proponents of such legislation characterize the present policy under which the Government retains for use by all citizens the rights to patents developed at Government expense, as an unwarranted intervention by Government in the free enterprise system.

It is contended that only a small number of Government-owned patents are being used, that the public, therefore, is not getting maximum advantage of the large sums it invested in Government-funded R. & D., and that this is stifling technology by not getting the ideas contained in these patents to the marketplace. Their proposed solution is to let the Government contractors, large and small, have monopoly rights to inventions developed under Government contracts at Government expense.

The premise behind this proposal is that with monopoly rights to the inventions, contractors will have an incentive to develop and market inventions that otherwise would not be used.

I recommend that Congress not enact S. 1657. After more than 40 years of dealing with contractors, as well as R. & D. work in a high technology area, I am convinced that contractors, particularly large companies, should not be given title to Government-financed inventions. I believe that enactment of this bill would constitute a subsidy of large Government contractors and reduce competition. Companies that contract for R. & D. work generally insist on retaining title to all inventions that may result under the contract. In other words, the rights belong to the party that pays for the work.

But for Government contracts, however, this bill would reverse the situation. The one who received the contract, rather than the one who paid for the work, would retain the patent rights. This is one basic point. We're setting up two rules of justice. One that takes care of the large corporations who have lots of money and the other one that gives them some more money at the expense of the individual public who paid for it.

That's my main objection to this bill. Congress, by enacting this bill, would have two sets of laws, one for the rich; one for poor.

If we carry this idea to its logical extension, companies should give their employees the rights to inventions developed in the course of their employment. Few do.

Many Members of Congress are in favor of minimizing Government intervention in the marketplace. This bill, however, would increase such intervention. The large sums that the Government spends on R. & D. work, particularly by the Department of Defense, has an unavoidable impact in the private sector. It is inevitable that the lion's share of Government R. & D. expenditures will continue to go to large corporations, since they alone have the facilities, resources, and background necessary to undertake most major R. & D. programs.

These contracts provide know-how and experience that give these firms a leg up on potential competitors. To go a step further and give these contractors monopoly rights to the technology that results from this work, is to promote an even greater concentration of economic and political power in large corporations. And that's the very thing that all people running for the House or the Senate are always talking about: The equity of the public. When we come to enact laws though, which cannot easily be understood by the public, then we do the opposite.

The sole purpose of a patent is to restrict others from using an idea. Some large companies, therefore, flood their field of technology with patents covering even minor details and concepts of dubious value. This is so-called defensive patenting. This deters potential competitors from entering into the new field. They fear getting bogged down in patent infringement suits, which could consume large sums in legal fees, as well as years of delay. The bill would serve to encourage large contractors to extend this practice into the Government contract work, to the detriment of their competitors, particularly to the detriment of small business.

Last year Congress passed the University and Small Business Patent Procedures Act. The act gives universities and small businesses title to the patents they develop at Government expense. In testifying on that bill, I pointed out that large corporations would try to extend to themselves the same special benefits Congress established under the act for small businesses and universities.

The bill you are now considering does exactly this very thing. It reverses the previous legislation by increasing the advantage the large contractors already have over small businesses. I cannot comprehend why Congress would change our laws so that the large defense contractors, companies such as General Dynamics, McDonnell-Douglas, United Technologies, and many others, could more effectively establish monopoly positions in their fields of technology.

There is already far too much concentration of defense business in these large corporations. They already enjoy advantages that are not available to the smaller companies. I do not subscribe to the notion that patent monopolies are necessary to promote technology. Good ideas tend to be used with or without patents. There will always be inventors who contend that they have a wonderful invention no one will finance, if they cannot get exclusive patent rights. My experience, however, is that over many years, about a quarter of a century, that behind the euphoric claims of these

inventors are very practical problems. And that the reason their idea is not adopted often has little, if anything, to do with the patent aspects.

As I see it, the purpose of Government in acquiring title to patents is not to earn money from the patent or for the Government to become the salesman or promotor of the inventions, rather, the purpose is to insure that the public is not prevented from using inventions for which it has paid, that is, the people have paid.

Perhaps the same objective could be achieved by legislation that would make any inventions developed at Government expense unpatentable, except those that we need to prevent foreigners from using them. Alternatively, if Congress ultimately decides that granting exclusive rights will promote the use of worthwhile technology, it should set up a system to dispense these rights by public sale through competitive bidding. In that way, every citizen interested in the invention would have an equal opportunity to buy the rights.

The question might arise, if there's little evidence that Government-owned patents are being used, if the vast majority of them are of little commercial value, and if you think the Government should not view these patents as income-generating devices, what is wrong with letting large Government contractors have them?

The answer is twofold:

First, it would be wrong, in my opinion, for the Government to finance an important breakthrough, say, in the field of energy conservation, only to find itself in the position where the contractor has a 17-year monopoly during which time he alone, for all practical purposes, could decide whether to make it available for public use and at what price;

Second, large Government contractors would have a strong incentive to file patent applications covering even insignificant items encountered in their Government contracts. By so doing, they could further discourage competition in their fields, regardless of the merits of these patents or whether they would survive a court test.

No doubt, you have been told that the Government patent policy deters companies from undertaking Government work, yet in more than a quarter of a century, I cannot recall a single case of a contractor turning down work for the naval nuclear propulsion program because of our policy of retaining rights to Government patents.

Although patent lawyers have a strong interest in such matters, I have also found that the top officials of most companies with whom I deal do not consider patents a major problem. They want the work because of the profit potential it offers, and because it enhances their experience and know-how.

The bill you are considering today is virtually identical to the one on which I testified before the Senate Commerce Committee during the last session of Congress. With your permission, I would like to insert into the record, my statement at those hearings, since it covers some of the points I make in greater detail. I would like permission to do that.[1]

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[1] The statement has been retained in the committee files.

I will be glad to answer any questions that you may have. I purposely made my statement very brief, because I know you're very busy.

Senator SCHMITT. Admiral, we appreciated your testimony and the consideration of our time. In questioning on the committee where I've been involved, we try to follow a 5-minute rule on questioning for every appearance, so, Senator Long, you were here first. Please proceed.

Senator LONG. Thank you, Mr. Chairman.

Admiral Rickover, I put a statement in the record that supports the same philosophy as your statement. May I say that down through the years I've had the pleasure of hearing you testify on this subject, and in my judgment you are perhaps the best informed witness I've heard on this subject. You know the problem directly and I really think that you're right about it.

I think we should recognize how this comes about. If a person does his own research, we all agree he's entitled to have a patent on it. No argument, no qualm. We provide that, have for many, many years. He should have a patent on research he does at his own expense. If he hires someone else to do it and the other man invents the device, the contract invariably states that the fellow who is paying for it will have the patent rights, even though the other man does the developing.

Admiral RICKOVER. You mean you're talking the way business is done in this country. Now they want the Government to do it a different way.

Senator LONG. But if I were the lawyer for a corporation or if I were the executive officer of a corporation, and I hired somebody to invent something for the corporation and I failed to provide in that contract that I would get those patent rights rather than that inventor, they would fire me, wouldn't they?

Admiral RICKOVER. Of course.

Senator LONG. Because they'd say I did not protect their interests. Now, the Government has encouraged invention by patents, private patents for those who do it. But where that does not seem adequate to get the result, the Government has then undertaken to say we will pay whatever it takes on a contract to develop something. We'll even give them a contract with a guaranteed profit in it where they could look at what we want, and about the only way they could fail to make a profit is to fail to add up the column of figures right.

Admiral RICKOVER. I thoroughly agree with you, sir. What you're saying is that some people would prefer that the conglomerate of all of our people should have fewer rights than one individual has; is that what you're saying?

Senator LONG. That's what I'm saying. It seems to me that when you pay for it, you pay the whole cost of the research plus a guaranteed profit for the contractor, and then you permit that contractor to have the patent rights on that product and either deny it to the public or else charge whatever he wants to.

Admiral RICKOVER. May I interrupt, sir? I am used to doing my work logically. If I didn't do it logically, the submarines wouldn't operate. This whole effort to shift patent policy offends my sense of logic.

We need industry in this country. We can't get along without it. But certainly the individual who pays for something should have the equity. This bill takes away the equity for the people who paid for it.

Senator LONG. It seems to me as though it would be just as though you hired a contractor to build a bridge across the river, and having paid him every penny that the contract required, plus a guaranteed profit, you then permitted him to keep the bridge and charge the public anything he wanted to cross it. So they pay for it more times than one.

Admiral RICKOVER. The difference between my testimony and yours, sir, is that you are a more effective speaker.

Senator LONG. Thank you very much, Admiral.

Senator SCHMITT. Thank you, Senator.

Admiral, you and I have had many chances to exchange questions.

I would just say we obviously don't agree on this. The Constitution does protect the rights of patents of individuals and groups of private individuals. I don't think it protects the right of the Government to retain patents. The most important thing, in my opinion, is that the value of these patents be realized by the population as a whole, and with the retention of patents in the Government it's just not being done. That's where you and I disagree.

Admiral RICKOVER. That is because most of the patents do not have much value, but they are available. So then you are talking about the lethargy of our people. You will find that is true in any country. Any man can patent something. You can have 20,000 patents and there might only be 10 of those that people are willing to spend money on and exploit. Not every idea is worth promoting.

Senator SCHMITT. Well, our logical analysis of the patent situation just comes out with different solutions, Admiral. I respect yours. You've been tremendously successful in your field. But it appears to me, and I think to many others in the Congress, that unless these Federal inventions have title transferred with them to the private sector, that we're just not realizing nearly the benefits that might accrue.

Admiral RICKOVER. Mr. Chairman, I can only talk from my personal experience. Probably I've had far more experience than you've had in this field and I've never seen that occur. I've never seen it.

Senator SCHMITT. I'm sorry, we just have different experience with patenting, I guess.

Admiral RICKOVER. I believe I've had far more experience than you've had in this area, sir.

You certainly have a lot more experience as a Senator, but I don't think you have as much experience as I have in technology.

Senator SCHMITT. Well, I've had a little bit.

Admiral RICKOVER. Yes, you have a great deal, but not as much as I have, because you're not old enough.

Senator SCHMITT. Heavens, I would never get into the argument that I'm as old as you are.

Admiral RICKOVER. No, it would hurt your election chances.

Senator SCHMITT. Congressman Ertel?

Mr. ERTEL. Thank you, Senator Schmitt.

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I guess to equate you to Senator Schmitt as far as experience levels, obviously you've had a lot more years on Earth, but there's also the fact that sometimes we do things wrong for a long period of time and we shouldn't continue to do them that way. And sometimes it takes new people on the scene to see ways to change things and make them better.

Admiral RICKOVER. You're absolutely right, sir. But if I had done things wrong in the nuclear submarine program, a lot of lives would have been lost and it would have come to your attention many, many times over the last 25 years. So you may have a fine record as a legislator. I have a fair record as an engineer.

Mr. ERTEL. I would agree with you 100 percent. You've been an outstanding engineer.

Admiral RICKOVER. But you're questioning my competence in judging engineering. I don't question your competence as a legislator.

Senator SCHMITT. Admiral, if the Congressman would yield, we're not questioning your competence as an engineer. We're questioning your logic as it reflects the transfer of patents and technology into the private sector, where we just have a different set of conclusions.

Admiral RICKOVER. Yes. But an ounce of experience is worth more than a book of logic.

Senator SCHMITT. I refer you to your previous testimony. Congressman, pardon me.

Mr. ERTEL. Thank you, Senator Schmitt.

Admiral, just let me ask you a couple of questions. In the House bill we have a provision in there that if, in fact, the contractor does not commercialize the invention, the Federal Government can come in and take the patent back. The Senate bill has essentially the same march-in rights. This provision protects against the idea of defensive patenting, does it not?

Admiral RICKOVER. That's been in the law for years, but it's hardly ever used.

Mr. ERTEL. If they don't have title, how can it be in the law? If we don't give title at the present time to the contractor, how can march-in rights be in the law to take away the title?

Admiral RICKOVER. But if you give contract rights immediately to the contractor, that stops everyone else from using it. There's no chance. Most patents are not worthwhile. They'd never follow it anyway. There are a few that are very significant, and you cannot take statistics of this kind and make a rule that covers all patents, because most of them aren't worthwhile. Anyone can patent anything.

Mr. ERTEL. Admiral, I'm trying to be specific, if I might. In your testimony you talk about defensive patenting. Now, I worked for a judge who litigated and had considerable litigation over patents, and I probably have a bit more experience in the litigation end, than most people in the Congress. I agree with you that there is defensive patenting. However, the point is that our bill provides that if you file a defensive patent, you must commercialize it. So it really rules out defensive patenting. How do you respond to that?

Admiral RICKOVER. May I ask Mr. Foster to comment?

Senator SCHMITT. Identify yourself, sir.

Mr. FOSTER. My name is Thomas L. Foster. I work for the Admiral on financial and contract matters.

Concerning the confusion over the march-in rights, I believe that you are aware that under the President's patent policy, there were provisions about the march-in rights. Our understanding is that, as of the last time we checked, they've never been used.

There is also an experience that comes from our school of hard knocks which is not in the school of patenting so much as it is in the case of contract litigation. From our experience it would be virtually impossible to expect a quick trip through the courts or for the Government to set up arrangements whereby you would be able to monitor the avidity with which a contractor pursued his patent, get it before the board, get a determination that you should go to court and try to exercise march-in rights and fight off the legal objections that would go to that. Seventeen years of life of a patent is pretty small in relation to some of the legal issues that we've had to encounter in a claims hearing.

Mr. ERTEL. I don't want to belabor the point, but it just seems to me that your analysis fails to understand that there are private interests out there. If there is defensive patenting and someone is blocked from a field, then that person will move the issue and therefore it will come to Government's attention.

What we have today is a Government which doesn't market patents. It has no apparatus that is effective to move its research and development into the private sector. What we are trying to do is move our research and development into the private sector and give an incentive to develop it. If they don't do that, obviously if somebody else feels it's commercially valuable, they will come in and raise the issue and raise the march-in rights.

What we're trying to do is get a self-policing effect, rather than involving the Government money to do all the "alleged marketing," which it never does. Just like we find in the U.S. Congress, that if we pass a law and it affects somebody adversely, believe me, my office phone rings off the hook. I would suggest the same thing would be true in patents. If there is a case of a company not commercializing a patented invention, other companies will find out and raise the march-in issue.

Senator SCHMITT. Congressman Dunn?

Mr. DUNN. Thank you, Mr. Chairman.

I'm just a freshman here, sir, so I won't even begin to try to equate my experience with yours. But in its infinite wisdom last year, Congress passed a law which said that universities and small businesses do have these rights. That's been held up, I assume, by the Supreme Court. So I would like to talk about your word "logical."

Is it logical to you that because I'm a small contractor or because I'm a university, I have this right? I believe the Federal Government defines a small business as having $25 million or less gross sales per year. If I exceed that, do I suddenly lose these rights? Does that seem logical to you?

Admiral RICKOVER. I testified against that part of the policy.

Mr. DUNN. I know, but you base your life on logic. Does that seem logical to you?

Admiral RICKOVER. What I have seen, the way it's worked out, the universities have never—do not make any attempt to use them.

Mr. DUNN. But that is the law now, for universities and small businesses.

Admiral RICKOVER. That's right.

Mr. DUNN. So is it logical that we should say yes to one segment of our society and no——

Admiral RICKOVER. As I say, I was against that.

Mr. DUNN. But you would agree it's not logical the way it is now?

Admiral RICKOVER. That's correct. I think you'll have a hard time taking away from small business, though, once you put it into the law. But it hasn't worked out the way Congress hoped it would.

Senator SCHMITT. I think we should say for the record, that the regulations governing the implementation of that law really have not come forward, and certainly have not been exercised.

Congressman Skeen?

Mr. SKEEN. No questions.

Senator SCHMITT. My dear colleage from the Second District of New Mexico, it's nice to have you here. I think we need to move on.

Admiral, we appreciate your testimony.

Admiral RICKOVER. Thank you very much.

Senator SCHMITT. It's a tight morning for everybody. I know there's a long day on the floor with the continuing resolutions.

Admiral RICKOVER. I appreciate that very much. At least this is one sign of our democracy, that a person who disagrees even with most of the members of the committee, does have a chance to voice his thoughts. And that's something we should be very grateful for.

Senator LONG. Admiral, may I just say this? We used to have a saying in the Senate, even before I arrived here, that one man on the side of God makes a majority. I believe that you're on the right side.

Admiral RICKOVER. I think God can get along without my help. I don't think this committee can.

Senator SCHMITT. Thank you.

Our next witness is Dr. George Keyworth, Director of the Office of Science and Technology Policy, and the Presidential Science Adviser. Dr. Keyworth, welcome. Again, if you can summarize your testimony easily, we would appreciate it.

STATEMENT OF DR. GEORGE KEYWORTH, DIRECTOR, OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Dr. KEYWORTH. Chairman Schmitt, Mr. Ertel, Senator Long, members of the committees, I am pleased to have the opportunity to participate in this hearing on legislation introduced by Senator Schmitt and Congressman Ertel to promote the commercial use of new technology resulting from federally sponsored research and development—and, I might add, to contribute a somewhat divergent opinion from that just heard.

This legislation addresses an important element in the mutually supportive efforts of the administration and Congress to stimulate increased industrial innovation and productivity and to assure the maximum commercial application of technologies developed under

Federal support. In my remarks, Mr. Chairman, I wish to address the broad policy ramifications of these bills as they relate particularly to science and technology. I will leave to my colleagues from the executive agencies the task of addressing other policy and technical issues.

As you are well aware, economic recovery is at the very top of President Reagan's agenda. The administration is committed to taking the steps necessary to strengthen the Nation's economy at home and to enhance its competitiveness abroad. It is clear that taking those steps and achieving those goals will not be easy.

For perhaps too many years we have been emphasizing the distribution of the country's wealth more than the improved production of it. Inflation has skyrocketed as our consumption has increased and our rate of saving declined. We have neglected necessary capital formation, investment in new, more efficient and productive plants, and longer range research and development. Our ever-increasing taxes have acted to drain off investment and to dampen invention and innovation.

In our zeal to manage the many environmental health and safety impacts of industrialization, we have often overreacted or reacted without sufficient knowledge, burdening many sectors of the society with unnecessary, costly regulations. The results have been slow industrial growth, a leveling off of productivity gain, and a decreased competitiveness in world markets.

The administration is confronting these problems primarily on two major fronts. First, to control the hyperinflation which has so ravaged our national economy and so threatened the well-being of American families at all levels of income, the President is moving to scale back the size and cost of the Federal Government and to eliminate, target, consolidate, or return to the States costly Federal domestic programs. Second, to restart the Nation's sputtering engine of economic growth and regenerate the necessary savings, investment, productivity, and employment potential, economic and regulatory barriers to private sector economic initiatives are being identified and eliminated or reduced.

Mr. Chairman, it is absolutely clear that the prosperity, security, and international stature and competitiveness of this country are highly dependent upon steady growth in the productivity of our industrial sector. It is equally clear that continued growth in industrial productivity requires the constant introduction of advanced concepts, processes, and technologies leading to new products, new companies, and entire new industries. It is the rate of influx of such innovation that either fuels or limits the productive growth of our national economy.

The Reagan administration recognizes the crucial role of innovation in productivity growth and the degree to which technological innovation builds upon the results of scientific research. Ultimately, research is the source of the innovative ideas and technologies which fuel our industrial machinery and drive our economy. New scientific knowledge and technological know-how represent our most productive capital today. It is capital that can only be generated by adequate investment in research and development, both by Government and the private sector. Accordingly, this administration views basic research as a vital investment with a good return.

That investment is a Federal responsibility, but one that must be shared by the private sector.

In the R. & D. spectrum ranging from basic research, through applied research, to development and demonstration, the heaviest responsibility for the support and conduct of basic research naturally falls on the Government. This is particularly true where long-term, high-risk research is involved and in areas where the payoff of such research is likely to offer broad societal benefits with little commercial payoff.

It has been characteristic that, as work moves from the basic research stage to application and development, the private sector assumes a greater part of its support. This, of course, will continue to be the case, and wherever possible, we hope to expand industry's involvement and support of R. & D.

An improved tax situation, such as that provided for by the recently enacted tax legislation, is expected to allow industries to make large investments in new and more productive plants, as well as to put more of their own funds into new product R. & D. Regulatory reform, such as that being pursued along a number of fronts by the Reagan administration, is expected to reduce the overall burden of compliance with many unnecessary or excessively costly regulations. And, perhaps just as important, regulatory reform will reduce the degree to which industrial R. & D. is diverted from pursuing the identification and deployment of new technologies, rather than assuring compliance with Federal regulations.

It is our firm belief that this approach, along with proper attention to such matters as trade policy and patent reform, should go a long way toward revitalizing American innovation by allowing the private sector to act more freely in the marketplace.

Mr. Chairman, the intent of the legislation before us today is entirely consistent with the administration's economic recovery program. Basically, we see the bills as extending to the entire private sector, regardless of the size or profit-nonprofit status of the performing organization, the right provided last year by Public Law 96–517 to small businesses and nonprofit institutions to retain title to patents developed under Federal R. & D. funding. This legislation is clearly complementary to the administration's approach to strengthening the country's R. & D. enterprise in several ways.

First, by permitting and encouraging retention by private R. & D. performers of rights to patents they have developed under Federal funding, the bill removes a major disincentive to the participation by a broad array of highly skilled industrial scientists and engineers in important national research and development efforts. This increased participation should benefit the entire country by assuring that its critical R. & D. requirements are being met by all available resources. In addition, it is expected that increased participation in Federal R. & D. efforts will have the added benefit of broadening and strengthening industrial R. & D. capabilities.

Second, by encouraging the commercialization of patents developed under Federal R. & D. funding, this legislation will serve to stimulate the increased availability and use of new concepts, processes, and technologies resulting from federally funded research and development. In essence, this legislation is permitting our

patent system to fulfill its originally intended function to stimulate the development and commercial marketing of inventions.

Third, in addition to strengthening both Federal research and development programs and enhancing industrial R. & D. capabilities, we see this legislation as strengthing vital Government-industry linkages. It seems evident that there simply is no way this country can meet the tremendous domestic and international challenges it faces without close cooperation and coordination among all of the segments of our society and sectors of our economy.

I would, Mr. Chairman, like to raise one issue with respect to the content of this legislation. It is clear that the implementation of its provisions and thus the attainment of its goals will be considerably facilitated by a formal mechanism of coordination among the affected research and development agencies.

The Federal Coordinating Council for Science, Engineering, and Technology provides a logical mechanism for achieving such coordination, and I would support the use of this mechanism for that purpose. I personally believe that the goals of the legislation will be more readily attainable if a single lead agency is required to provide overall leadership and to chair the interagency committee under the Council. In my view, the legislation should be written to give the President responsibility for designating a lead agency to perform this function through FCCSET and to have the Office of Federal Procurement Policy develop and promulgate policy and regulations.

Mr. Chairmen, that concludes my formal testimony. I would be pleased to answer any questions that you or the committee members may wish to ask of me, as well as to work with you in the future in developing this important legislation.

Senator SCHMITT. Thank you, Dr. Keyworth.

Doctor, with the exception of your suggestion of the use of FCCSET and, of course, the few substantive differences between the House and Senate bill, can we take this testimony as a general endorsement of what we're trying to do?

Dr. KEYWORTH. Thoroughly.

Senator SCHMITT. With regard to the Senate bill, would you comment on whether OSTP could better exercise the responsibilities outlined for the Secretary of Commerce and, if so, why?

Dr. KEYWORTH. As I mentioned in my testimony, I view OSTP involvement, through FCCSET, as a mechanism for central overview and coordination as well as evidence of the administration's committment to the activities of this important legislation. I by no means consider OSTP involvement as critical to whether or not we would support this legislation. The responsibilities outlined for the secretary of commerce appear appropriate.

Senator SCHMITT. Both bills have been streamlined in terms of the amount of administrative management that will be required, and I think it's appropriate that we've done that. The more I look at it, the more I like both bills, compared to the bills that were introduced last year. And the administrative overhead should be far less, but still some part of a general administrative coordination is required. You don't see that as critical. It's just a question of settling on the most logical and efficient way to do this.

Dr. KEYWORTH. Correct. I view the use of FCCSET to achieve that coordination as a suggestion as one way to proceed.

Senator SCHMITT. Another point of discussion has continued between the House and Senate, again, not one of insurmountable difficulty. That is the issue of recoupment. Congressman Ertel's bill has recoupment as a means for the American taxpayer to get back some of the investment in R. & D. moneys. Through the action of either bill, greater benefits from the technologies that have been developed will be achieved.

Do you have a position or suggestions to the committees on the issue of recoupment?

Dr. KEYWORTH. I would say simply that in the interests of operational simplicity, recoupment would be best left out.

Senator SCHMITT. But again you don't see that as a determinant of yes or no on the bill?

Dr. KEYWORTH. It's certainly not an issue that's fundamental to the administration's support of this legislation.

Senator SCHMITT. Thank you, Dr. Keyworth.

Congressman Ertel.

Mr. ERTEL. Thank you, Senator Schmitt.

I'm happy to see that the differences between our bills doesn't seem to cause a great deal of concern. There is one other difference that exists between the bills, which may or may not be of major consequence to the administration. That's the question of judicial review. We in the House, have provided for judicial review of certain administrative decisions. That, of course, does increase the possibility of administrative tieup. On the other hand, the Senate bill does not have judicial review.

Can you tell us what your preference would be on that and why?

Dr. KEYWORTH. I'm afraid I'm going to have to decline on the grounds that I am not sufficiently well informed on this issue. I think that the question would be best posed, perhaps, to the General Counsel of Commerce.

Mr. ERTEL. All right. I'll be glad to address that to him. I certainly appreciate your testimony and your position and have no further questions at this time.

Senator SCHMITT. Congressman Dunn.

Mr. DUNN. I have a question, perhaps for the chairman, concerning the limitations. Excluding the four exceptions here, are we to assume that each contract would provide that any patent would automatically belong to the companies? What if I get a patent and the Federal Government decides that it properly belongs to one of those four—do I have to sue or does the other company sue? Do we have an idea what operation we're creating there?

Senator SCHMITT. I think that's one of the issues we need to explore with various witnesses, as we go through the hearings on both sides of Congress. The basic thrust of the bills is to put the burden of proof on the Government rather than on the contractor.

Mr. DUNN. So in 90 percent of the cases, the patent would automatically belong to the contractor?

Senator SCHMITT. Certainly, in the vast majority of cases, it would be my intent, and I believe Congressman Ertel's intent, that the patent would be in the hands of the contractor, unless the Government could demonstrate, according to the guidelines set out

in the bill, that there was an overriding public interest for it to remain in the hands of Government. There are certain guidelines set out in the bill for that decision to be made.

The issue which is, I think, the thrust of our discussion, is should that decision be subjected to judicial review. I don't have an opinion, maybe because not being a lawyer, I tend to think that those decisions will be self-evident. Maybe they won't. We'll just have to work that out.

Mr. DUNN. That's an answer to my question. I am not an attorney either, but I'm questioning the amount of work we might be creating for attorneys in the future.

Senator SCHMITT. Some of our witnesses will be able to tell us that, because we do have a modified title in the contract provisions, in the patent policies of certain agencies. The Department of Defense, the Department of Energy, and NASA all do make exceptions. DOD probably more so than others for nonclassified technologies.

So I think we can draw on the experience of some of the agencies as we go through this hearing process.

Mr. ERTEL. If the gentleman would yield, I think the intent really, as Senator Schmitt says, is to transfer title, except for those four exceptions. Now it would seem to me that when we're entering into the contract, there's research and development from the beginning. You know you're getting into these particular four areas, that could be worked out at a practical state early on.

Therefore the presumption is that the title would go to the contractor; however, you know full well what areas you're going into. If it was a national security issue or one of those other issues, you would be able to try and determine the proper way, and work it out from there.

Senator SCHMITT. The Congressman makes an excellent point, I would suspect, that the contract negotiations will be determinative in almost every case.

Mr. ERTEL. Hopefully, there wouldn't be just judicial review. I happen to be a lawyer. I have nothing against lawyers, but I don't think we ought to continue to expand the role of lawyers and the role of litigation. So we're trying not to.

Senator SCHMITT. Dr. Keyworth, did you have any comments on these comments?

Dr. KEYWORTH. No. But, if I may, I would like to add one small comment to the first question that you posed to me, Mr. Chairman. I simply want to make clear the recommendation I made that FCCSET be viewed strictly as a coordinating mechanism. Regarding the administrative lead role, I would certainly recommend it remain in Commerce. My office is neither interested in, nor really qualified for, any administrative role. I want to particularly make that point clear.

Senator SCHMITT. Congressman Skeen.

Mr. SKEEN. I have no questions at this time, sir.

Senator SCHMITT. Thank you, Dr. Keyworth. We will be communicating with you more on this. Your testimony is much appreciated. If, in the course of your activities in OSTP, you have developed, or would develop, further statistical or factual information that relates to patent transfer and patent utilization within the private

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sector versus retention in the Federal Government, the committee would much appreciate it. Maybe I'll have the staff contact you to see if there is anything specific in that area that we ought to request of you.

Dr. KEYWORTH. We will certainly do that, and we will look with particular intensity at the area of nuclear submarine development.

[The statement follows:]

STATEMENT OF DR. GEORGE A. KEYWORTH II, DIRECTOR, OFFICE OF SCIENCE AND TECHNOLOGY POLICY, EXECUTIVE OFFICE OF THE PRESIDENT

Chairman Schmitt, Chairman Fuqua, Members of the Committees, I am pleased to have the opportunity to participate in this hearing on legislation introduced by Senator Schmitt and Congressman Ertel to promote the commercial use of new technology resulting from federally sponsored research and development (R&D). This legislation addresses an important element in the mutually supportive efforts of the Administration and Congress to stimulate increased industrial innovation and productivity and to assure the maximum commercial application of technologies developed under Federal support.

In my remarks, Mr. Chairmen, I wish to address the broad policy ramifications of these Bills as they relate to science and technology. I will leave to my colleagues from the Executive agencies the task of addressing other policy and technical issues.

As you are well aware, economic recovery is at the very top of President Reagan's agenda. The Administration is committed to taking the steps necessary to strengthen the Nation's economy at home and to enhance its competitiveness abroad. It is clear that taking those steps and achieving those goals will not be easy. For perhaps too many years, we have been emphasizing the distribution of the country's wealth more than the improved production of it. Inflation has skyrocketed as our consumption has increased and our rate of saving declined. We have neglected necessary capital formation, investment in new, more efficient and productive plants, and longer range research and development. Our ever-increasing taxes have acted to drain off investment and to dampen invention and innovation. In our zeal to manage the many environmental, health and safety impacts of industrialization, we have often overreacted—or reacted without sufficient knowledge—burdening many sectors of the society with unnecessary, costly regulations. The results have been slowed industrial growth, a leveling off of productivity gain, and decreased competitiveness in World markets.

These are among the most urgent problems this Administration confronts. And, confronting them in every possible way must be our top priority if we are to prevail as a leading economic force in the World—a World that looks to, and depends on, our success in such leadership.

The Administration is confronting these problems primarily on two major fronts. First, to control the hyper-inflation which has so ravaged our national economy and so threatened the well-being of American families at all levels of income, the President is moving to scale back the size and cost of the Federal government and to eliminate, target, consolidate, or return to the States, costly Federal domestic programs. Second, to restart the Nation's sputtering engine of economic growth and regenerate the necessary savings, investment, productivity, and employment potential, economic and regulatory barriers to private sector economic initiatives are being identified and eliminated or reduced.

Mr. Chairmen, it is absolutely clear that the prosperity, security, and international stature and competitiveness of this country are highly dependent upon steady growth in productivity of our industrial sector. It is equally clear that continued growth in industrial productivity requires the constant introduction of advanced concepts, processes and technologies leading to new products, new companies, and whole new industries. It is the rate of influx of such innovation that either fuels or limits the productive growth of our National economy.

The Reagan Administration recognizes the crucial role of innovation in productivity growth and the degree to which technological innovation builds upon the results of scientific research. Ultimately, research is the source of the innovative ideas and technologies which fuel our industrial machinery and drive our economy. New scientific knowledge and technological know-how represent our most productive capital today. It is capital that can only be generated by adequate investment in research and development, both by government and the private sector.

Accordingly, this Administration views basic research as a vital investment with a good return. That investment is a Federal responsibility, but one that must be

shared by the private sector. In the R&D spectrum ranging from basic research, through applied research, to development and demonstration, the heaviest responsibility for the support and conduct of basic research naturally falls on the government. This is particularly true where long-term, high-risk research is involved, and in areas where the payoff of such research is likely to offer broad societal benefits with little commercial payoff. It has been characteristic that, as work moves from the basic research stage toward application and development, the private sector assumes a greater part of its support. But there are certain projects, such as those involving National security, large space ventures, or selected advanced energy technologies, where the government's support continues throughout research, development and technical demonstration because broad National interests are at stake, or the government is the principal consumer of the product. This, of course, will continue to be the case. But, wherever possible, we hope to expand industry's involvement and support.

The Administration will strive to achieve such expanded involvement primarily through continued regulatory reform and tax policy, rather than through direct financial subsidy. Industry will be allowed and encouraged to revitalize its own strengths and capabilities in which this Administration has such great faith.

An improved tax situation, such as that provided for by the recently enacted tax legislation, is expected to allow industries to make large investments in new and more productive plants, as well as to put more of their own funds into new product R. & D. Regulatory reform, such as that being pursued along a number of fronts by the Reagan Administration, is expected to reduce the overall burden of compliance with many unnecessary or excessively costly regulations. And, perhaps just as important, regulatory reform will reduce the degree to which industrial R. & D. is diverted from pursuing the identification with the development of new technologies rather than assuring compliance Federal regulations. It is our firm belief that this approach, along with proper attention to such matters as trade policy and patent reform should go a long way toward revitalizing American innovation by allowing the private sector to act more freely in the marketplace.

Mr. Chairman, the intent of the legislation before us today is entirely consistent with the Administration's economic recovery program. Basically, we see the Bills as extending to the entire private sector, regardless of the size or profit/non-profit status of the performing organization, the right provided last year by Public Law 96-517 to small business and non-profit institutions to retain title to patents developed under Federal R. & D. funding.

This legislation is clearly complementary to the Administration's approach to strengthening this country's R. & D. enterprise in several ways. First, by permitting and encouraging retention by private R. & D. performers of rights to patents they have developed under Federal funding, the Bill removes a major disincentive to the participation by a broad array of highly skilled industrial scientists and engineers in important national research and development efforts. This increased participation should benefit the entire country by assuring that its critical R. & D. requirements are being met by all available resources. In addition, it is expected that increased participation in Federal R. & D. efforts will have the added benefit of broadening and strengthening industrial R. & D. capabilities.

Second, by encouraging the commercialization of patents developed under Federal R. & D. funding, this legislation will serve to stimulate the increased ability and use of new concepts, processes, and technologies resulting from federally funded research and development. In essence, this legislation is permitting our patent system to fulfill its intended function—to stimulate the development and commercial marketing of inventions.

Third, in addition to strengthening both Federal research and development programs and enhancing industrial R. & D. capabilities, we see this legislation as strengthening vital government-industry linkages. It seems evident that there simply is no way this country can meet the tremendous domestic and international challenges it faces without close cooperation and coordination among all of the segments of our society and sectors of our economy.

I would, Mr. Chairman, like to raise one issue with respect to the content of this legislation. It is clear that the implementation of its provisions and thus the attainment of its goals will be considerably facilitated by a formal mechanism, of coordination among the affected research and development agencies. The Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) provides a logical mechanism for achieving such coordination and I would support the use of this mechanism for that purpose. I personally believe that the goals of the legislation will be more readily attainable if a single lead agency is required to provide overall leadership and to chair the inter-agency committee under the Council. In view, the legislation should be written to give the President responsibility for designating a

lead agency to perform this function through FCCSET and to have the Office of Federal Procurement Policy (OFPP) develop and promulgate policy and regulations.

Mr. Chairman, that concludes my formal testimony. I would be pleased to answer any questions you or your Committee members may wish to ask of me, and to work with you in further developing this important legislation.

Senator SCHMITT. Our next witness is Mr. Sherman Unger, General Counsel of the Department of Commerce, and if the Commissioner of Patents would come forward, Gerald Mossinghoff, Commissioner of the Patent and Trademark Office.

STATEMENTS OF SHERMAN UNGER, GENERAL COUNSEL, DEPARTMENT OF COMMERCE, AND GERALD J. MOSSINGHOFF, COMMISSIONER, PATENT AND TRADEMARK OFFICE

Mr. UNGER. Mr. Chairman, members of the committee, I appreciate the opportunity this morning to appear representing the Department of Commerce and to testify on Federal patent policy.

Until the last decade, the United States has tended to assume its technological preeminence would continue without serious challenge. Unfortunately, this assumption has proven wrong. There is a widespread perception that the decline in our technological lead is rooted in a decline in the rates of invention, innovation, and productivity. Several such indicators are cited. The more significant of these are: First, the percentage of U.S. patent applications filed by and patents issued to residents of foreign countries has increased steadily since the late sixties.

Second, research and development activity in the United States increased sharply from the midfifties to the midsixties but slowed markedly thereafter.

Third, several countries have been increasing R. & D. spending at a more rapid rate than we, and have caught up with us when R. & D. expenditures are expressed as a percent of gross national product.

If we're to get our economy on track and encourage the investment in new technological development, we need to reverse these trends. One step in that direction is to insure that we're not wasting the valuable resources of Government-generated technology.

Dr. Keyworth has already indicated the strong support of the administration for a patent policy which allows Government contractors an opportunity to retain the title to the inventions they create under Federal R. & D. programs. I want to emphasize that the Department of Commerce and the Patent and Trademark Office are enthusiastic supporters of this position. Rather than repeat the reasons why, I wish to focus on the responsibilities these bills give to the Department of Commerce.

Title II of S. 1657 gives the Department of Commerce substantial responsibilities for implementing patent policy. In consultation with the Office of Federal Procurement Policy, the Secretary of Commerce is authorized and directed to formulate and recommend to the President rules, regulations and procedures which are necessary and desirable to assure the consistent application of policies in the bill. H.R. 4564 gives a similar responsibility to the Federal Coordinating Council for Science, Engineering and Technology. Our view is that this is not a proper function for the Department of

Commerce. Such rules and regulations are really procurement and property management matters rather than patent matters. As such, they are best left to the traditional GSA-DOD-OFPP axis which has more expertise in Government and procurement.

The Commerce Department has ample opportunity to have its views considered in the development of any regulations. We believe this is a more proper role for our agency. We worked very well with the GSA and OFPP, both of which were quite properly assigned rulemaking responsibilities under Public Law 96-517.

S. 1657 would also give the Department of Commerce the responsibility for accumulating, analyzing and disseminating data necessary to evaluate the administration and effectiveness of Federal patent policy.

Again, H.R. 4564 gives a similar responsibility to FCCSET. Section 3 of the President's statement on Government patent policy issued on October 10, 1963, and revised on August 23, 1971, calls for the preparation of a report at least annually by the Federal Council for Science and Technology in consultation with the Department of Justice. The purpose of the report is to analyze the effectiveness of the policy and to make recommendations for revision or modification as believed necessary in light of the practices of the Federal agencies.

The Federal Council for Science and Technology was abolished by Public Law 94-282, and established in its place the Federal Coordinating Council for Science, Engineering and Technology. Following the report of December 1968, the report was published on a biannual basis. The latest publication was inclusive of calendar years 1973 through 1976. In practice, organization and publication of the patent policy report was the responsibility of the person who chaired the Committee on Government Patent Policy under the Federal Council on Science and Technology and the Committee on Intellectual Property Information under FCCSET.

The chairman of these committees has generally been the Assistant Secretary of Commerce for Science and Technology, later changed to the Assistant Secretary for Productivity, Technology and Innovation. As you know, the responsibilities for this position in the Department are being revised.

The collection of data is essential to meaningful policy formation. To assure that the subject continues to receive high-level attention, I believe that this responsibility should be vested in the President, who could then designate a lead agency for collecting the necessary data. The Department would be willing to accept this responsibility.

The third major function which S. 1657 would place in the Department of Commerce is the responsibility to resolve, with administrative finality, disputes between an agency and any agrieved party, concerning the allocation and licensing of patent rights. H.R. 4564 doesn't contain a corresponding provision. We don't believe that this is a proper function for the Department of Commerce. There are existing means for resolving procurement disputes between agencies and contractors, before going to the courts. This provision would interpose the judgment of the Department of Commerce into contracting areas where the contracting agencies have the most expertise in resolving procurement and licensing issues.

Additionally, resolving disputes will require substantial Commerce resources which, in a period of budget restraint, can only come at the expense of more pressing priorities. In general, however, we would be pleased to perform the other duties described in the bills.

I would like to single out one in particular, because I believe it is essential to the success of our efforts. Both S. 1657 and H.R. 4564 would continue the present authority of the Department to carryout its patent licensing program. This program is currently located in the National Technical Information Service.

The United States is the only major industrialized country without an organization for managing and exploiting technology owned by the Government. The Department of Commerce's patent licensing program is the Government's only centralized attempt at achieving commercial utilization of Government-owned patents.

Not all agencies participate in this program. For example, NASA and the Department of Energy operate their own programs. Agencies which are participating in the Department of Commerce program include: the Department of Agriculture, the Department of the Interior, the National Bureau of Standards, the VA, the National Institutes of Health, and the National Science Foundation.

The Commerce program filed its first patents to protect foreign property rights for U.S. industry in 1976. The foreign patent inventory has increased to about 700 patents, and over 150 are under license, primarily to U.S. companies.

With respect to the licensing aspect, the Department of Commerce issued its first royalty bearing license in fiscal year 1977. Approximately $150,000 in execution fees and annual minimums have been collected and, as expected, royalties based on actual commercial sales will start accruing in fiscal year 1982 with annual royalties forecast to return over $1 million to the U.S. Treasury by fiscal year 1985.

I believe that the experience that the Department of Commerce has gained during the past few years in its administration of the Government licensing program, suggests that this program should be continued and should be maintained within the Department.

I should note, however, that the administration objects to earmarking of royalty revenues to fund program activities. It strongly believes that a program of this nature should be funded through direct appropriations.

An effective Federal patent policy must be supported by an effective patent system. Commissioner Mossinghoff will address some of the plans that the Department has for improving the operation of the Patent and Trademark Office and maintaining strong patent incentives for an effective Federal patent policy.

Thank you.

Mr. ERTEL [presiding]. Thank you very much, Mr. Unger. We appreciate your statement.

As I understand it in a nutshell, you support the thrust of the legislation. Is that correct?

Mr. UNGER. That is correct.

Mr. ERTEL. I do have a question in relationship to the licensing office in Commerce, the National Technical Information Service. My understanding is that this has been zeroed out in the budget.

What, if anything, does that do to your testimony, if that's true?

Mr. UNGER. If it has been zeroed out, I'm not aware of it. I do know that there were some early proposals to phase it out, but our current plans call for a continuation of the program provided it is funded through direct appropriations.

Mr. ERTEL. That's my information.

Now, let's assume for a moment that the National Technical Information Service is basically abolished. Would that influence your judgment as to your support for this bill?

Mr. UNGER. No. Not for the support of the bill.

Mr. ERTEL. That licensing activity had been zeroed out, as you're well aware.

Doesn't that suggest to you that maybe that gives more emphasis for this kind of a bill, to try and find a way to distribute the information in research and development that the Federal Government has into the private sector?

If we have no licensing provisions within the Government, or any office for licensing, then you've got to find a way through the private enterprise mechanism if you want to try and move that research and development throughout the industrial sector of the United States.

Mr. UNGER. I would agree with that 100 percent, but, again, I want to emphasize that we are not now planning to phase it out.

Mr. ERTEL. Let me ask you another question. You stated the Government simply has not been able to devote the resources necessary to market aggressively the patent portfolio of 28,000 patents it holds.

In view of the fact that the Government should be able to make a profit from marketing patents, and there is already a group in the National Technical Information Service, which may not be existing in the future, why is the Government unable to provide the startup funds needed to get this done?

Why is the Government unable to do the licensing?

Mr. UNGER. I think Commissioner Mossinghoff will cover that point in his statement.

Mr. MOSSINGHOFF. Congressman, if I could respond now to that. First, with respect to the licensing programs of NTIS, I understand that no final decisions have been made in connection with the fiscal year 1983 budget to zero it out. So, I think Mr. Unger's testimony is based on the assumption that it at least is a matter still under discussion.

Mr. UNGER. Absolutely. I thought my testimony to the effect that we hope to be able to continue the licensing program was good as of 5 p.m. yesterday. I don't think anything changed overnight.

Mr. ERTEL. Things tend to fluctuate frequently. I understand some people had an office, and they came back and their desk was gone.

So, maybe you will be able to get a reprieve on the licensing.

Mr. MOSSINGHOFF. With respect to the other agencies, my experience—having come from the National Aeronautics and Space Administration—was that we had a pretty sound licensing program, at least as set up in the regulations. As you know, NASA broke a lot of ground in defining policies for licensing.

I remember the head of that program coming into my office, the General Counsel's office, and pleading for travel money and money for exhibits to go to trade fairs. He had a portfolio of some 3,000 patents he was trying to market. And the realities were simply that we did not have the resources to devote to that kind of expenditure. The royalties NASA receives go back to the Treasury, so it's a matter of whether you're going to use your travel money to support the Shuttle program or you are going to use your travel money to attempt to license patents. Inevitably, you know what the answer is: It's the line programs.

I think the thrust of this legislation is right in tune with that. This puts the burdens and the rewards where they belong: Outside the Federal Government, into the contractors' hands.

Mr. ERTEL. Thank you.

I guess maybe what I should have done was taken your testimony first, because it seems that you're in tandem here. Maybe we'll just defer the rest of the questioning and have your testimony at this time, Mr. Mossinghoff.

Mr. MOSSINGHOFF. Mr. Chairman and members of the committees, I welcome this opportunity to testify at these joint hearings on Federal patent policy. Your committees played key roles last year in enacting Public Law 96-517. In my opinion, we have a unique opportunity this year to extend such a coherent policy to all Government contractors.

S. 1657 and H.R. 4564 would do that in a way which would encourage the development and commercialization of new technology resulting from Government programs. We thus strongly support the provisions of these bills, which would leave commercial rights, in the form of title, to contractors to stimulate such commercialization.

To provide some background on the specific bills you are considering, let me discuss briefly Secretary Baldrige's plans for improving the U.S. patent system generally. He feels that these improvements are necessary in order to derive the full beneficial impacts envisioned in your legislation.

There was a time, not very long ago, that the very basis for the U.S. patent system was seriously questioned. President Johnson's Commission on the Patent System, in the midsixties, was formed in part to examine whether the system itself was attuned to modern needs. That Commission and all subsequent studies confirmed that the incentives of the patent system are as important now as they ever have been in the history of our Nation.

Internationally, patent systems are being instituted where there were none—for example, in China and in Thailand—and strengthened in other regions—for example, in Brazil and through the European patent office.

In this country, issues regarding the patent system itself center not on whether it is needed, but rather on how well it is serving inventors and industry.

Unfortunately, the Patent and Trademark Office is not serving this Nation as well as it should. We now have a backlog of more than 206,000 patent applications. During this fiscal year, which ends today, we will process 87,000 applications, which is 20,000 less than the number of applications we received during this fiscal

year. This means that the 206,000 backlog is growing by about 10 percent each year. It now takes almost 23 months, on the average, to get a patent. That time will grow to over 2 years, no matter what immediate steps this administration takes.

It now takes longer to register a trademark—about 25 months—than at any previous time in history. In the documentation area, an average of 7 percent of the patents are missing from the examiners' files. And in our rapidly developing fields, that number is as high as one out of four.

Secretary Baldrige has determined that this situation is unacceptable. To turn things around, he has established three broad goals:

To reduce the patent application backlog, so we can reduce the time it takes to get a patent;

To reduce the trademark application backlog, so that applicants will know quickly whether a trademark is registerable, and will receive the actual registration in a more timely fashion; and

To lay the foundation for a fully automated Patent and Trademark Office.

As immediate first steps to achieving these goals, Secretary Baldrige has approved an acceleration of our campaign to hire new examiners in fiscal year 1982. We currently plan to hire 127 new examiners as early as possible, and we are discussing with the Office of Management and Budget the possibility of significantly increasing that number. Our recruitment is one of several steps we are taking to upgrade our operations generally. For example, by far greater reliance on automated systems, on new word-processing equipment, and increased reliance on contractor support.

The Secretary's plans for the Patent and Trademark Office itself are complemented by the new reexamination procedures which went into effect this past July. Under those procedures, the Patent and Trademark Office, for the first time, will be able to reexamine an issued patent if the owner or a prospective licensee or a potential infringer has reason to believe that the patent is invalid.

To date, we have received and are processing over 75 requests for reexamination, over the 2 months that this has been in effect. Almost half of those are involved in patent litigation. Four of the cases were actually ordered by the district court judge; when the issue of invalidity was raised, the judge ordered the parties to go back to the Patent Office for reexamination.

To bring more consistency to court rulings in the patent area, we are strongly supporting the bills now pending before the Judiciary Committee, S. 21 and H.R. 2405, which would establish a single Federal appellate court to hear patent cases from the Federal district courts and the various administrative boards of the Patent and Trademark Office. By providing a single authoritative tribunal to handle patent cases nationwide, these bills will contribute greatly to a single standard of patentability which will be understandable to inventors and businessmen alike.

Sometimes overlooked in the discussions of the high percentage of patents held invalid by the courts is the fact that district courts and courts of appeal disagree with each other on patentability more often than either disagrees with the standard applied in the Patent and Trademark Office.

These developments concerning the patent system itself are indirectly related to the issue of Federal patent policy. A smoothly operating system that can deliver defensible patents in a timely fashion is necessary in order to realize the full incentive potential of these bills. Therefore, I look forward to a continuation of the interest that each of these committees has shown over the years in the incentives that are provided by a strong and well-working patent system.

Those incentives—to invest in new plants and equipment and in the engineering and marketing needed to get new products into the marketplace—are as important to stimulate the use of new technology resulting from a Federal sponsorship as they are to stimulate the use of new technology resulting from privately funded research and development. Constructive efforts over the years to develop a comprehensive patent policy have focused on how to harness the incentives of the patent system, to encourage the use of federally sponsored invention while maintaining appropriate safeguards.

Mr. Chairman, I would disagree with Admiral Rickover in the statement which he made during his testimony. That is: That the purpose of patents is to prevent people from using products.

It's true that patents give inventors exclusive rights and give the owner exclusive rights, but the purpose of the patent system is spelled out in the Constitution, and that is: To promote the progress of science and the useful arts. Any policy that doesn't do that, however elegant it might be and however logical it might be, is not using the constitutional incentives of the patent system.

These committees are well aware of the long history of the debate on Federal patent policy, and the three major milestones:

First, the issuance in 1963 by President Kennedy of the Memorandum and Statement on Government Patent Policy;

Second, the revision of that policy in 1971 by President Nixon; and

Finally, the enactment last year of Public Law 96-517, which affords important incentives to encourage the development and use of new technology resulting from Federal programs but which, by its terms, as you've noted, applies only to nonprofit and small business concerns.

The two bills under consideration this morning, for the first time would establish a truly uniform patent policy, one that applies to all Government agencies and to all of their contractors. And that policy is specifically designed to spur business executives to invest in inventions resulting from Federal sponsorship. The bills draw upon the extensive experience of the Government that the likelihood of an invention being developed and commercially used are significantly increased when exclusive commercial rights, in the form of title, are given to the contractor.

We endorse the statement you made, Mr. Chairman, in your introductory statement in the Congressional Record:

> Based on NASA's experience, the ratio is about 20 to 1, in terms of the likelihood of an invention being brought to commercial application when the contractor retains title, as compared to when the Government takes title and licenses the patent.

Major goals of the Department of Commerce are to promote private sector capital formation, job creation, and creativity. The

two bills you are considering are designed specifically to contribute to those goals. By permitting Government contractors, except in narrowly defined areas, to retain commercial rights to their inventions, subject to a broad Government license and march-in rights, the bills will encourage the most qualified and competent contractors to participate in Government programs and to stimulate the introduction of new products into commerce, thereby promoting competition.

Another major goal of the Department of Commerce is to minimize regulatory and administrative barriers to business growth, profitability, and competitiveness, by establishing easily understood standards for the allocation of rights to inventions. The bills would permit business judgments to be made and carried out with a minimum of bureaucratic delays and uncertainties.

The march-in rights which would be established in the bills are particularly important. In our view, they provide an answer to those who fear that giving commercial rights to Government contractors will somehow permit suppression of the new technology, or somehow have antitrust implications.

My final comments will be directed to the matter of recoupment, that is, whether the Government should share in royalty income or profits from a contractor who successfully used the incentives of the act to market the invention. The Senate bill is silent on the matter of recoupment, whereas the House bill includes provisions specifically directed to recoupment. If the purpose of the legislation is, as we believe, to stimulate the use of new technology and to do so in a way easily understood and carried out by private concerns, whether small or large, we favor the approach of the Senate bill.

In closing, Mr. Chairman, let me again express our belief that you have a unique opportunity this year of building on a law passed last December, to establish a uniform, coherent, and flexible patent policy, one designed so that all Government contractors can use the incentives of the patent system to seek and develop commercial uses of federally funded inventions.

Thank you, Mr. Chairman.

[The statement follows:]

STATEMENT OF GERALD J. MOSSINGHOFF, COMMISSIONER OF PATENTS AND TRADEMARKS, DEPARTMENT OF COMMERCE

Mr. Chairmen and members of the committees, I welcome this opportunity to testify at these joint hearings on Federal patent policy.

During 1981 the Federal government will invest over $32 billion in research and development programs. That represents over 47 percent of our overall national investment in science and technology. Government-funded research and development are necessary to support directly the line programs of agencies such as the Departments of Defense, Health and Human Services, Energy and Agriculture, as well as NASA and the National Science Foundation. Those programs must also be made to contribute significantly to the overall capability of this nation—to increase our productivity generally and our ability to compete in world markets. To achieve that result we must have a coherent and understandable policy to stimulate the widespread use in the private sector of the results of Federal research and development efforts. And yet, after more than 30 years of studies and debate, we are still operating under a patchwork of differing laws and regulations.

Your committees played key roles in enacting effective legislation last year to govern the allocation of rights to inventions made by nonprofit and small business concerns under Federal sponsorship. The goal in that legislation was to get inventions that are made in government programs into the marketplace. We have a unique opportunity this year to extend such a coherent policy to all government

contractors. S. 1657 and H.R. 4564 would do that in a way which would encourage the development and commercialization of new technology resulting from government programs. We thus strongly support the provisions of these bills which would leave commercial rights in the form of title to contractors to stimulate such commercialization.

To provide background on the specific bills you are considering, let me discuss briefly Secretary Baldrige's plan for improving the U.S. patent system generally. He feels that these improvements are necessary in order to derive the full beneficial impacts envisioned in S. 1657 and H.R. 4564.

There was a time not long ago that the very basis for the U.S. patent system was seriously questioned. President Johnson's Commission on the Patent System in the mid-1960's was formed in part to examine whether the system itself was attuned to modern needs. That Commission, and all subsequent studies, confirmed that the incentives of the patent system are as important now as they ever have been in our Nation's history. Internationally, patent systems are being instituted where there were none, for example in China and in Thailand, and strengthened in other regions, for example in Brazil and through the European Patent Office. In this country, issues regarding the patent system itself now center not on whether it is needed, but rather on how well it is working to serve inventors and industry.

Unfortunately, the Patent and Trademark Office is not serving this nation as well as it should. We now have a backlog of more than 206,000 patent applications. During fiscal year 1981, which ends today, we will process 87,000 applications, over 20,000 less than we received during the fiscal year. That means the backlog is growing by about 10 percent each year. It now takes almost 23 months on the average to get a patent. That time will grow to over two years no matter what immediate steps the Administration takes. It now takes longer to register a trademark—about 25 months—than at any previous time in history. In the documentation area, an average of 7 percent of the patents are missing from the examiner's files, and in rapidly developing fields that number is as high as one out of four.

Secretary Baldrige has determined that this situation is unacceptable. To turn things around, he has established three goals: To reduce the patent application backlog so that we can reduce the time it takes to get a patent; to reduce the trademark application backlog so that applicants will know whether a mark is registrable, and will receive the actual registration in a more timely fashion; and to lay the foundation for a fully automated Patent and Trademark Office.

As an immediate first step to achieving those goals, Secretary Baldrige has approved an acceleration of our campaign to hire new examiners in fiscal year 1982. We currently plan to hire 127 new examiners as early as possible in fiscal year 1982, and we are discussing with the Office of Management and Budget the possibility of significantly increasing that number. Our recruitment is one of several steps we are taking to upgrade our operations generally, for example, by far greater reliance on automated systems, new word processing equipment and increased reliance on contractor support.

The Secretary's plans for the Patent and Trademark Office itself are complemented by the new reexamination procedures which went into effect this past July. Under those procedures, the Patent and Trademark Office for the first time will reexamine an issued patent if the owner, or a prospective licensee or potential infringer, has reason to question the validity of the patent. To date we have received and are processing over 75 requests for reexamination, almost half of which are involved in patent lawsuits.

To bring more consistency to court rulings in the patent area, we are strongly supporting the bills now pending in the Judiciary Committee, S. 21 and H.R. 2405, which would establish a single Federal appellate court to hear patent cases from the Federal district courts and the various administrative boards of the Patent and Trademark Office. By providing a single authoritative tribunal to handle patent cases nationwide, these bills will contribute greatly to a single standard of patentability which will be understandable to inventors and businessmen alike. Sometimes overlooked in the discussions of the high percentage of patents held invalid by the courts, is the fact that district courts and courts of appeal disagree with each other on patentability more often than either disagrees with the standard applied in the Office.

These developments concerning the patent system itself are indirectly related to the issue of Federal patent policy. A smoothly operating system that can deliver defensible patents in a timely fasion is necessary in order to realize the full incentive potential of these bills. Therefore, I look forward to a continuation of the interest each of these committees has shown over the years in the incentives that are provided by a strong and well-working patent system.

Those incentives—to invest in new plants and equipment and in the engineering and marketing needed to get new products into the marketplace—are as important to stimulate the use of new technology resulting from Federal sponsorship as they are to stimulate the use of new technology resulting from privately funded research and development. Constructive efforts over the years to develop a comprehensive patent policy have focussed on how to harness the incentives of the patent system to encourage use of Federally sponsored inventions, while maintaining appropriate safeguards.

These committees are well aware of the long history of the debate on Federal patent policy and the three major milestones: The issuance in 1963 by President Kennedy of the Memorandum and Statement of Government Patent Policy; the revision of that policy in 1971 by President Nixon; and the enactment last December of Public Law 96-517, which affords important incentives to encourage the development and use of new technology resulting from Federal programs, but which by its terms applies only to nonprofit and small business concerns.

S. 1657 and H.S. 4564, for the first time, would establish a truly uniform patent policy, one that applies to all government agencies and to all of their contractors. And that policy is specifically designed to spur business executives to invest in inventions resulting from Federal sponsorship. The bills draw upon the extensive experience of the government that the likelihood of an invention being developed and commercially used are significantly increased when exclusive commercial rights in the form of title are given to the contractor.

Contractor ownership of patented inventions also provides another significant benefit: it relieves the government of the responsibilities, burdens and costs of seeking commercial uses for inventions made by others under Federal sponsorship. The rate of commercialization of government-owned inventions made under contract is very low. This is so principally for two reasons: First, when the government takes title and attempts to license others, it takes the invention away from the persons most interested in its development, namely the inventor and his coworkers. Secondly, the government simply has not been able to devote the resources necessary to market aggressively the patent portfolio of the 28,000 patents it owns.

Major goals of the Department of Commerce are to promote private sector capital formation, job creation and productivity. S. 1657 and H.S. 4564 are designed specifically to contribute to those goals. By permitting government contractors, except in narrowly defined areas, to retain commercial rights to their inventions, subject to a broad government license and "march-in rights," the bills will encourage the most qualified and competent contractors to participate in government programs, and stimulate the introduction of new products into commerce, thereby promoting competition.

Another major goal of the Department is to minimize regulatory and administrative barriers to business growth, profitability, trade and competitiveness. By establishing easily understood standards for the allocation of rights to inventions, S. 1657 and H.R. 4564 would permit business judgments to be made and carried out with a minimum of bureaucratic delays and uncertainties.

The "march-in rights" which would be established in the bills are important. In our view they provide an answer to those who fear that giving commercial rights to government contractors will somehow permit suppression of the new technology or somehow have antitrust implications.

My final comments will be directed to the matter of recoupment i.e., whether the government should share in royalty income or profits from a contractor who successfully used the incentives of the act to market an invention. The Senate bill is silent on the matter of recoupment, whereas the House bill includes provisions specifically directed to recoupment. If the purpose of the legislation is, as we believe, to stimulate the use of new technology and to do so in a way easily understood and carried out by private concerns, whether small or large, we favor the approch of S. 1657.

In closing, Mr. Chairman, let me again express our belief that you have a unique opportunity, building on the law passed last December, to establish a uniform, coherent and flexible patent policy, one designed so that all government contractors can use the incentives of the patent system to seek and develop commercial uses of Federally funded inventions.

Mr. ERTEL. Thank you very much for your comments.

Let me ask you a number of questions.

No. 1, NASA does have a policy, which had been very effective in various agencies, in commercializing research and development conducted by NASA.

Just for the record, will you describe generally NASA's policy, so we can have it for the record?

Mr. MOSSINGHOFF. NASA is governed by section 305 of the National Aeronautics and Space Act, which gives NASA very broad authority to waive to contractors title to inventions, if the administrator determines that such action would serve the public interest. In determining whether an action would or would not serve the public interest, NASA is guided by the current Presidential memorandum which was issued in 1971.

The statistical results are that NASA has waived title in a significant number of cases in which the contractor requests waiver. So from that point of view, NASA does grant a high percentage of the requests for waiver. On the other hand, the requests for waivers are extremely low in comparison to the more than 30,000 inventions that have been reported to NASA over the years. So from a statistical point of view, NASA's policy is basically that of a title-in-the-Government agency.

NASA also has a program of acquiring patents on inventions made by its employees. The statistics taken at the time that I testified last year were that something on the order of 3,000 patents based on employee inventions had been obtained by NASA; and also, that a little over 1,100 patents on contractor's inventions has been obtained by NASA. If you wish, I can request NASA to provide you with updated statistics—but roughly 1,200 inventions were waived under the waiver policy.

Mr. ERTEL. We should certainly like to have that information submitted. The record will be held open for that.

[The following information was subsequently received for the record:]

Through September 30, 1981, NASA has obtained 3,692 patents. Of these, 1,980 were based on inventions made by NASA employees and 1,712 were based on inventions reported by NASA contractors. NASA has acted on 1,052 requests for waiver of title to identified inventions (reported after contracting), of which 779 (74.08 percent) were granted. Also, NASA has acted on 639 requests for advance waiver (at the time of contracting), of which 359 (56.2 percent) were granted.

Mr. ERTEL. Let me ask you a question. We have in the House bill: "The Government shall keep title if it is necessary to assure the adequate protection of the public health, safety, and welfare." What effect do you think this will have on the title in contractor provisions, and how would it impact?

Mr. MOSSINGHOFF. I guess my prediction would be that, with respect to agencies such as NASA and the Department of Defense, that's currently the standard they use, and it probably wouldn't have any great or significant effect. It could very well have a significant effect on the Department of Health and Human Services. Depending on how it is implemented, it could very well have them be a title in the Government agency. I think if it did that, it would be not consistent with the goals of either pieces of legislation.

It is hard to say how it would be implemented by those agencies. I think they would probably be in a better position to testify to that. But it does provide a legislative basis for, say, an entire agency retaining title in the Government. As I say, I think that would be unfortunate.

Mr. ERTEL. Would you suggest any modification of that language to prevent what you think is the entitlement in the agency theory being applied in administrative regulations?

Mr. MOSSINGHOFF. I would be pleased to do that. I think I would like to contemplate that before I suggest it. I think there have been standards applied, or suggested, in some areas, that the Government should take title if the agency determines that to do otherwise would directly impact on the mission of the agency. I think that might be a better standard that might apply to the health area as well as the energy area.

Mr. ERTEL. Would you have that in the legislation, the mission of the agency?

Mr. MOSSINGHOFF. Yes.

Mr. ERTEL. Let me turn to one final area that you talked about. You only mentioned it briefly in your testimony. That's recoupment. Your basic idea is that we don't have recoupment because it makes it easier, I suspect, to administer the provisions. I suspect that's correct. If you don't have to make any decision like that, administratively, you don't have to worry about some of the problems.

On the other hand, what about the equity argument which we heard from Senator Long, basically, and Admiral Rickover, that somehow—their version of it is that the public has really paid for the development of this, and therefore, transferring this to the private sector is giving away a public asset, an asset the public really owns.

I suppose you could argue even further from that, well, maybe we're going to do that, but we at least ought to get paid back in some degree for some of the things that we have provided—money for research and development—and as an equitable argument, at least we ought to get that back. Otherwise, as you heard the argument, the Government pays for it, you make a profit off the research and development of the contract, and then you get the bonus of the patent on top of that, and make, maybe, tremendous profits beyond that.

How would you respond to that argument, on recoupment? I think recoupment is certainly a step back to try and at least appease that.

Mr. MOSSINGHOFF. Mr. Chairman, I would respond with two points. In the case of NASA, for example, when they fund a research and development contract, develop something for spacecraft, develop a valve that might go into the spacecraft, they get the benefit of that funding when the valve is delivered to them, and when they can under royalty-free license procure other valves exactly like that for similar spacecraft. So they get the benefit of what they paid for.

Similarly, with the Department of Defense, when they pay for weapons systems they get the weapons systems. The broad, royalty-free license means they can meet the need for those weapons systems. A very effective valve, let's say, to use that analogy, may be provided, and nothing patentable will come out of it. The patent is a kind of side benefit. There are no contracts to invent things; there are contracts to develop and qualify valve systems, for example.

Right now, corporations are clearly not filing on every patentable invention that comes through their privately funded research and development. It seems to me that if you are a corporate executive considering two patentable inventions, you would have to make a decision as to where you are going to put your patent attorney resources this month. If one of those inventions was done under, say, a NASA contract, and you know that under the provisions you could patent that invention, you would give the Government a broad royalty-free license so that the Government could recompete for any agency in the Government to use that invention royalty-free. You also would have to give up the march-in rights. They're not rights against the world. Then there's the possibility that someone will require the invention by Government regulation, in which case you would have to license it. In NASA's, for example, if the contractor did not market an invention in 3 years, either the contractor would have to issue a license, or the Government would issue it. In other words, that invention comes with a lot of strings attached to it. Then you look at the alternative, and find you have corporate invention that may not be quite as good, that may not have quite the potential—but it has none of those strings attached.

I think you could make the argument that if in addition to the Federal income tax that would be paid on any profits you make and any royalties you get, if you add another string in recoupment and reporting of recoupment, it seems to me you may well tip the balance against exploiting the Government invention.

The second point is that I wouldn't underestimate the administrative burdens. I think in your provision on recoupment you have listed all the reasons for not having recoupment if any of the stated tests are met. But put yourself in the position of a GS–13 contracting officer somewhere in a field installation, what kind of resources would you need, really, to make these determinations, to decide whether the recoupment should go in or not. It's a fairly heavy administrative burden provision.

The great advantage of all the legislation in the two bills that we are considering today is that it is a lot simpler than the patchwork of administrative burdens that you have. I don't think, as Dr. Keyworth said, that recoupment is something that will affect the administration support for the general policies in there bills. But those factors I have indicated ought to be taken into account.

Mr. ERTEL. Thank you very much.

I would like to recognize the fact that we have Congressman Nelson who has joined us on the committee. I yield back to Senator Schmitt.

Senator SCHMITT [presiding]. Congressman Dunn, did you get in your questions?

Mr. DUNN. Not yet.

Senator SCHMITT. Why don't you go ahead. Then we will recognize Congressman Nelson.

Mr. DUNN. Is Mr. Alexander here? Would you mind taking the chair, please. This question should be directed to all three of you.

My question revolves around supporting the intent of the legislation, and the question of whether it will really accomplish that. Let me address those concerns and give you an example, talking about NASA. Right now, NASA funds a program called Winglets, which

is really an increase in fuel efficiency for major aircraft. That research is being done by Boeing, McDonnell Douglas, and Lockheed. But right now there is a great deal of cooperation, and has been for a number of years, between the major aircraft manufacturers and NASA because they are all doing the research together. They are all seeing the benefit.

The scenario I suggest is, under that example, what happens if they suddenly are each on their own competing? Suppose, for example, that you are Boeing, and McDonnell Douglas invents the ideal one—what's going to be Boeing's reaction, having to go to McDonnell Douglas and say, "I want to use that." Versus going back to the Government and saying, "I want to use that for my aircraft?"

I wonder if we are really accomplishing what we want. Do you understand the thrust of my example? Have I made myself clear? Right now, I am not competing with other manufacturers. I would have to go to the Government to get that patent. But what happens if I'm Boeing, you're McDonnell Douglas, and you invented something and all of a sudden I have to go to you. What kind of cooperation am I going to get there?

Before that point, we were both working under the same profit motive; the corporation really needed it from you, and you know you can get the patent—and then would charge me for it.

I can see it happening thousands of times.

Mr. MOSSINGHOFF. I think in those kinds of cases, where the invention is related to the very purpose of an agency's mission—in NASA's case, for example, aeronautical research and development—we must separate government and commercial use. First, if the Winglet is developed for the Government itself to use, if it would be a development for the Department of Defense or NASA to use itself, the broad, royalty-free license would mean that no patent would be good against any other Government contractor.

So if McDonnell Douglas received a patent, that patent would be subjected to very broad——

Mr. DUNN. It might be restricted to military aircraft. You could use something like the Winglet on commercial aircraft.

Mr. MOSSINGHOFF. I can't judge what the NASA decision might be in that case. But that might be an area where you would find that the allocation of exclusive rights to the contractor would not be consistent, in Senator Schmitt's bill's terms, with the purposes of the act, and in Congressman Ertel's terms, with the purpose of the agency.

I agree with Congressman Ertel that the burden ought to be on the agency to show that that is an exception to the general rule that you would leave title in the contractor. Indeed, in the case you have indicated, for civilian airplanes the agency might very well want to sustain that showing, and both pieces of legislation permit that to be done.

Mr. DUNN. Mr. Alexander, do you have a comment? Are we going to increase competition, or decrease it?

Mr. ALEXANDER. Of course, we're not an aircraft manufacturer. And if I understand your question, what you're suggesting is exactly the way 3M does its business. It competes with all its competitors, and it has patents of its own, which it does not license to its

competitors, and the competitors have patents of their own, which they do not license. That's the way 3M does its business.

Mr. DUNN. Let's say you have three computer companies right now, and they give each of you *x* amount of dollars. Presently, the way it goes, all three of you cooperate, regardless which one of you invents it—because all three of you are going to benefit from it.

Now, under this new bill, let's say you're the one that's responsible for the primary invention. They are going to have to go to you, rather than come to me, as the Federal Government. I wonder if we're not decreasing the amount of cooperation at the research level.

Mr. ALEXANDER. I don't think so, because that's the way we do business. When we see something that we want that is owned by someone else, we go to them and deal with them. That's the way business works. And if we can't get a license, we don't do it. We feel they should treat us the same way.

You know, if everybody has a license under the inventions, 3M can't exist. It depends upon exclusivity to sell its products. As is well known, we have a profit margin of 25 percent on an average, and if you've got 10 competitors out there, you aren't going to get a profit margin of 25 percent.

3M is unique, I must admit, in this type of operation, because I think many companies like you're speaking of have profit margins probably around 5 percent. But we have a profit margin that high because we try to grow at least 10 percent a year.

Mr. DUNN. Thank you, Mr. Chairman.

Senator SCHMITT. Thank you, Congressman. If Congressman Russell would allow me, I would just like to follow up on this issue, particularly with Mr. Mossinghoff, who is most familiar with the NASA aeronautics program. Many of the products developed in that program have been through cooperative research, where a number of companies and NASA have jointly funded basic research and applied research in the development of aerodynamical systems and propulsion systems and so forth.

As I understand what you said, in that kind of an arrangement that NASA may have between one of NASA's laboratories and Pratt-Whitney, GE, and some other propulsion companies, say, it is, or can be, implicit in the arrangement that there are no exclusive patents to arise from that joint research; is that the thrust of your statement?

Mr. MOSSINGHOFF. Rather than say that no patents will arise, Senator, I would say that you might have an arrangement going in that says there will be no exclusive rights as between all the partners. There might be exclusive rights as between those partners and, others. That may very well be the desirable way to structure it.

But in each of the bills we are considering, that would be a way to implement it. I don't want to prejudge how a given case will turn out. The flexibility is there to do it. But again, the burden is on the agency, and I think it's exactly where it belongs.

Senator SCHMITT. Is that basically the way NASA handles these cooperative research programs?

Mr. MOSSINGHOFF. Today we are in a position where the contractor does not get title unless NASA waives its rights. The issue

doesn't come up unless the invention comes out of the cooperative research program. If it did, that would be one of the options that the NASA Inventions and Contributions Board would consider in deciding whether to grant a waiver. There are provisions in our waiver regulations to add specific conditions.

I suspect in your hypothetical case—a real case, really—if an invention came up, I think they would add those kinds of cross-licensing restrictions in the waiver itself.

Senator SCHMITT. The current situation is that the waiver is looked at after the fact.

Mr. MOSSINGHOFF. That's right.

Senator SCHMITT. The thrust of our legislation in both bills would be to have the agencies look at that before the fact, as they go into a contract negotiation, and determine what the arrangements are going to be for any hypothetical invention that may come out of the joint research.

Mr. MOSSINGHOFF. That's right. After the fact, of course, you have more facts. You know what the invention is, you know what its usefulness is. Going in before-the-fact, there is no reason why you wouldn't tailor the arrangement by making a determination that this is not one where you would automatically give title to one of the three or four joint partners, without cross-licensing agreements on the side. Those contracts, where you get two or three companies together, are complicated in their very nature, I don't think it concerns anyone that you have a little added burden, to fine-tune the patent side of it. Multiparty are not the normal, run of the mill R. & D. procurement. They are very complicated, as you know.

Senator SCHMITT. They are also very successful, once they are consummated.

Mr. MOSSINGHOFF. That's right.

Senator SCHMITT. Congressman Nelson?

Mr. NELSON. Just a quick question, Mr. Chairman.

Mr. Mossinghoff, in your testimony, you mention that the Government simply has not been able to devote the resources necessary to market aggressively the patent portfolio of the 28,000 patents that it owns. If the Government should be able to make a profit from marketing patents, and if there's already a group in the National Technical Information Service which is marketing patents, then why is the Government unable to provide the startup funds needed to make this a going concern?

Mr. MOSSINGHOFF. I think the thrust of my statement was basically toward those agencies which retain title now, and don't transfer it to the National Technical Information Service.

As I understand, NTIS has received about 25 percent of the Government-owned patents. NTIS is somewhat unique because they do have a trust fund situation where the revenues that they get from selling their publications and marketing those can be used across the board. I think the NTIS operation is fairly successful using their existing marketing structure.

In my experience in NASA, with travel funds and funds for exhibits and publications being limited, there is, very properly, a very great amount of pressure put on agencies not to travel, not to make exhibits and not to undertake all the other activities re-

quired of a successful licensing program. The agencies simply don't have the ability to get out to do the trade shows and send people around the country to negotiate licenses that they would have if they were in private industry and owned 28,000 patents.

If it's a choice at NASA between whether a patent lawyer can travel to the west coast to negotiate a patent license, or whether a technician goes to the west coast to solve some shuttle-related problem, I can guarantee you what the priorities are. That has been the fact.

Mr. NELSON. Thank you, Mr. Chairman.

Senator SCHMITT. Thank you, Congressman.

Mr. Unger, do you feel that OFPP alone can adequately address the problem of drafting and implementing the regulations from the bills, or do you think that the GSA and/or DOD's participation should be included?

Mr. UNGER. Yes. I think their participation should be included, and I am sure they would be, by consultation or otherwise. I think that would be part of the preparation of the regulations.

Senator SCHMITT. Gentlemen, what is the status of the regulations to implement Public Law 96-517?

Mr. MOSSINGHOFF. As you know, both the allocation of rights regulations and the licensing regulations, have been issued. I understand that with respect to the allocation of rights regulations, some 120 comments have been received, and the status, I think, is that the Office of Federal Procurement Policy is sorting through those comments in its effort to prepare a final regulation.

The regulations, I believe, were issued to be effective in the interim until final regulations were issued, so the act is being implemented. But as far as I know, there has been no final analysis of these 120 comments that they have received.

Senator SCHMITT. Mr. Mossinghoff, back to the joint research and development area. Actually, the joint research and technology area. There have been some examples of recoupment in that program, have there not?

Mr. MOSSINGHOFF. There have been. It's not been tied in any way to the patent clauses or the patent side of the contract.

You will recall there was actually to be a retrofit for quieting engines on existing aircraft. It turned out that the program on the retrofit didn't work as well as hoped. However, the technology coming out of the effort with Pratt and Whitney and McDonnell Douglas, the Douglas side of McDonnell Douglas, produced very good technology, to be built into new engines, to accoustically treat new engines, and there were recoupment provisions included.

And I believe NASA is beginning to collect the recoupment, but again, as a matter of procurement policy, not as a matter of tying into any patent royalties that might come out. In fact, I don't believe there were any patent inventions coming out of that program. I will check that for the record, if you wish.

Senator SCHMITT. Would you do that? And may we also ask Nelson to tell us whether they've learned any lessons in that recruitment activity that might help us evaluate the recoupment suggestion that has been made in these bills?

[The following information was subsequently received for the record:]

NASA research and development (R&D) contracts are employed primarily to obtain industrial or university assistance in the generation of advanced technology for application in future military or civil aircraft and as a technical basis for certification and safety regulation. NASA has used recoupment provisions in very limited situations where the contractor may obtain a special benefit or gain commercial advantage because of the contract work. Recoupment may also be required under the Agreement on Trade in Civil Aircraft when contracts are directed towards the development of particular components which are readily assimilated into a manufacturer's commercial product line.

As a result, NASA has viewed recoupment as a programmatic and procurement matter and not a patent policy issue. In particular, NASA has not required that recoupment should be tied to the allocation or disposition of patent rights in any given contract, nor that payback under any recoupment provision be related to the use of patented inventions.

On the two major programs in which recoupment was imposed, commercial benefit materialized and returns to the government were appreciable. The Refan program involved the demonstration of noise and performance improvement technology which was later applied to modified Pratt & Whitney engines installed on a new version of the McDonnell Douglas DC-9 transport. Thus far, the government has recouped $621,540 from Pratt & Whitney and $16,250 from McDonnell Douglas. The Engine Component Improvement program identified fuel-conservation improvements which could be incorporated in current engine production. Recoupment returns thus far have been $368,000 from Pratt & Whitney and $550,000 from General Electric. In addition to these four contracts, recoupment was included in a McDonnell Douglas contract for nacelle drag reduction technology. Although some eventual return may be realized, no money has yet been recouped.

In all of these activities, while some items of new technology were reported to NASA, neither the contractor nor NASA sought or obtained patents on such items.

Senator SCHMITT. Again, Mr. Mossinghoff, there's been fear expressed by the industry that the march-in provisions outlined in both bills might be used excessively by some agencies. In your experience, have you seen a march-in exercised by the Government very often, if at all?

Mr. MOSSINGHOFF. As far as I know, there are no cases in the almost 18-year history of President Kennedy's patent policy, the 1963 patent policy, where march-in rights were exercised by the government. In NASA's case, they monitored very closely the commercialization of patented, inventions. Where a contractor does not take practical steps within a 3-year period, NASA contacts them and in effect puts them on notice that they're ripe for a march-in, if there's some reason to. In at least 25 percent of the cases the contractor and NASA negotiated a march-in right, and the contractor turned the patent back to NASA to put in its portfolio.

It's really not accurate to say there haven't been march-in rights. In NASA's case, approximately 25 percent of their waivers were voided because of this failure to take effective steps to commercially utilize the invention.

With respect to some review centrally of march-in rights, my view would be that as we gain experience, maybe that would be appropriate. But right now, to set up the regulations in the office, with the bureaucracy and all the rest, it might be a solution looking for a problem because there have not been any problems with march-in rights.

Senator SCHMITT. Finally, for both of you, there's a provision in the Senate bill which calls for the Secretary of Commerce to determine with administrative finality disputes between agencies and contractors. The intent of this provision is to offer an intermediate step before judicial review where the dispute could be settled with

minimum expense to the contractor—and, I might add, to the Government. How do each of you feel about this?

Mr. UNGER. I think we're in agreement. Probably the Department of Commerce shouldn't have that authority. I think the Board of Contract Appeals would be more appropriate.

Senator SCHMITT. Mr. Mossinghoff?

Mr. MOSSINGHOFF. I agree with that, Senator. I think that that's an issue that is really to be decided between the agency and its contractor. And for us to try to get between would not be a wise thing to do. I am totally sympathetic when Congressman Ertel indicated that the purpose here should not be to create a lot of litigation. Maybe there ought to be an administrative way to resolve differences. But I guess I agree with Sherm, that the Board of Contract Appeals around the Government are well thought of by both the contractors and the agencies, and that could be a mechanism that could be used for administrative review between the determination and the essential court review.

Senator SCHMITT. Congressman Ertel, did you have any other questions?

Mr. ERTEL. Thank you. I've sort of exhausted mine. I would like to point out that we've been joined by Congressman Shamansky of Ohio. We welcome him to the hearing.

Senator SCHMITT. Congressman, I took down your name and I forgot to ask you, would you care to ask any questions? We have a 5-minute rule, in order of appearance.

Mr. SHAMANSKY. I thank you for the opportunity, but no, I have no questions.

Senator SCHMITT. Finally, Mr. Mossinghoff, do you have any personal knowledge of a planned agreement provision in the NASA, McDonnell Douglas, Johnson & Johnson joint venture in electrophoresis? Is that of significance to us in these deliberations?

Mr. MOSSINGHOFF. Yes, I do, sir. Obviously, it's a tailormade agreement for a specific case. But I think it's very important to note that there's a lot of good work being privately funded on the McDonnell Douglas, Johnson & Johnson side of that. The arrangement that we entered into was that this was essentially a private venture. NASA would provide Shuttle space and astronaut support for the experiment, but it was essentially a privately funded venture in electrophoresis. The patent clauses provide that all rights belong to McDonnell Douglas and Johnson & Johnson, since they're doing all the work, the unique work that's being done in it; and the National Aeronautics and Space Administration would only get rights if McDonnell Douglas walks away from it.

In other words, it's couched in stages. They go through the first stage and they've got an option to go on to the second stage. If at any stage they decide to walk away from the agreement, then not only does NASA get all the patent rights, but NASA also gets all the technical data, including background data. So it is, I think, a very good agreement to stimulate the use of space for privately funded research and development.

Senator SCHMITT. And really not inconsistent with agreements that might be developed under the umbrella of one or the other of these bills, should they become law.

Mr. MOSSINGHOFF. That's right. There is sufficient flexibility in each of the bills to handle something like that. As you know, having been through it yourself, that takes a lot of time to sort out all the issues and reach agreement. But in those kinds of cases that are unique, the time is well spent. In the general research and development case it is our view that that should be a simple, administratively less burdensome function.

Senator SCHMITT. The only reason I am really interested in patents, as I said before, is that while I was directing NASA's energy program, we couldn't negotiate an agreement between two Government agencies, NASA and the Department of the Interior.

Mr. MOSSINGHOFF. You continue to remind me of that, Senator.

Senator SCHMITT. Mr. Mossinghoff, who is one of the world's greatest patent lawyers, spent a year trying to negotiate that agreement and finally had to walk away from it because the policies were so different and interpreted so differently that there was not an agreement between two Government agencies. So you see my original key stimulation to get this thing fixed—and I'm mad about that.

Mr. ERTEL. I always thought Uncle Sam was one person.

Senator SCHMITT. That's what I thought when I entered the Government, in my naivete. But between Mr. Mossinghoff and myself, we found out differently.

Mr. SHAMANSKY. If I may just interject, I just came from another hearing of a Science and Technology Subcommittee. The conversation was about a treaty between various government agencies. As if that required a peace conference.

Senator SCHMITT. I wonder if it requires Senate ratification?

Mr. ERTEL. Senator, if you will indulge me for a moment, I would like to ask Mr. Unger one question. Mr. Mossinghoff came down very emphatically against recoupment. I wonder if you agree with that?

Mr. UNGER. Yes, I do agree.

Mr. ERTEL. I was afraid of that.

Thank you, Senator.

Senator SCHMITT. Thank you. Gentlemen, you are welcome to stay, if you wish. We will move now to Mr. Alexander, Cruzan Alexander, chief patent counsel, Minnesota Mining and Manufacturing; and we might as well ask Mr. Milton Socolar, Acting Comptroller General, the General Accounting Office, to come forward also, and we will try to move through the remainder of the testimony quickly. Again, I would ask each of you to summarize, if you feel that that would be useful to the committee. Your entire statements will be included in the record.

STATEMENTS OF CRUZAN ALEXANDER, CHIEF PATENT COUNSEL, MINNESOTA MINING & MANUFACTURING CO., OFFICE OF PATENT COUNSEL, AND MILTON J. SOCOLAR, ACTING COMPTROLLER GENERAL, GENERAL ACCOUNTING OFFICE

Mr. ALEXANDER. Mr. Chairman, members of the committees, my name is Cruzan Alexander and I am from St. Paul, Minn. I appreciate the opportunity to appear before these distinguished committees. Specifically, I will speak on behalf of 3M in support of legislation under which large businesses retain title to inventions they

make under Federal R. & D. contracts, as is now the case with small businesses under the present law.

Historically, 3M is one of those companies which does not participate greatly in Government-funded R. & D. programs. Government title has been one of the reasons.

I am a patent lawyer with 38 years of experience in corporate patent practice, the last 24 years of which have been with 3M. Since 1972 I have been chief patent counsel, managing an office of 35 patent lawyers.

3M is a large multinational with almost 90,000 employees in the United States and 50 countries abroad. We are a diversified, worldwide manufacturer and distributor of high-technology products in 45 major product lines. Such diverse products include coated abrasives, photographic film, pressure sensitive tape and health care products. 3M has many research laboratories in the United States and abroad, employing more than 5,000 men and women, and spent $283 million in 1980, or 4.7 percent of 3M's $6 billion in annual sales.

There are a number of ways to measure the effectiveness of 3M's research. One way is to measure the contribution of new products to annual sales. In 1980 new product sales compared favorably with our goal of generating 25 percent of sales from products introduced within the last 5 years. Another measure is the number of inventions. 3M files about 200 to 300 patent applications in the United States each year.

The annual dollar amount of 3M's federally funded R. & D. contracts, when compared to the billions of Federal R. & D. funds and 3M's total sales is very small, not more than $2 to $3 million. 3M, like many companies, does not depend upon fees from Federal R. & D. contracts for its income. For the most part, potential contractors in the industry are the high-technology companies. Like 3M, such companies are individually solicited by Government agencies, but these companies are often the hardest to convince to take on such Federal R. & D. work. In fact, 3M generally does not seek out, but rather shuns Federal R. & D. contracts for several reasons.

One reason is because such contracting activity would deprive 3M of many of its degrees of freedom normally associated with its own research. Under a Government R. & D. contract, 3M would have to comply with a form of control by the Government which decides what will be performed, how it will be performed, and for how much money. Another reason is that the profit for performing Federal R. & D. contracts is usually a fixed fee which generally does not equal the greater profits sought by 3M from the sale of patented products derived from its own funded R. & D. programs.

These reasons for avoiding Federal R. & D. contracts may be overcome if the potential for a new product is great enough. Nevertheless, 3M is reluctant to take federally funded R. & D. contracts. They will tie up the company's best qualified research employees and equipment on work that will not generate profitable products protected by company-owned patents.

If a Federal R. & D. contract relates to a business area where 3M has expended its own funds, 3M will seek title to inventions made by it under the contract. In a few instances, this can be negotiated

favorably to 3M because certain agencies will waive the title policy. But without title to 3M in such inventions, 3M will decline such contracts.

There have been exceptions to this 3M practice, cases where 3M has acted in the role of a good corporate citizen and accommodated a number of Federal agencies pursuing R. & D. work related to national defense, and cases where the particular subject matter of a contract was not a threat to 3M's preestablished technological position.

Large firms, like 3M, which have unique skills and prior investment and technology of interest to the Government, and which depend on the incentives of the patent system, will thus continue to shy away from contracts based on Government title policy. Foreclosing their title to inventions they make under the contracts may be just enough to turn them off completely. As a result, the Government will, unfortunately, continue to lose the best chance of success for many of its R. & D. programs.

Giving universities, nonprofit organizations and small businesses title is not an adequate means for the Government to increase participation in federally funded R. & D. programs. Large firms, like 3M, with a wealth of R. & D. skill and resources built up over many years, by seasoned scientific teams on a scale not enjoyed by small businesses and universities, must be brought into such programs in a large scale. Unless the title feature of the present law is extended to businesses without discriminating as to their size, 3M and many other large firms will continue to refuse to contract with Federal agencies which follow the title policy, or will continue to contract with them only on a limited scale. The full benefits of the incentives of title should be made available to all contractors when they undertake federally funded R. & D. contracts.

I would like to make a comment about the recoupment or payback provisions that might be included in Federal patent legislation. 3M is not in support of such payback provisions. They would also act as a disincentive to Federal R. & D. contracts for many of the same reasons I have listed in stating why the Government title policy is a disincentive.

Finally, specifically with regard to each of the Senate and the House bills, there are certain features, for example in sections 301 and 304, that need to be modified or changed in order to provide the further incentive for the private sector to enter into Federal R. & D. contracts. Our suggestions for modifications will be outlined in a supplemental statement which I request be included in the printed record. Mr. Chairman, I sincerely appreciate this opportunity to present these comments.

[The statements follow:]

STATEMENT OF CRUZAN ALEXANDER, CHIEF PATENT COUNSEL, MINNESOTA MINING AND MANUFACTURING CO.

Mr. Chairman, and members of the committees, my name is Cruzan Alexander, from St. Paul, Minnesota. I appreciate the opportunity to appear before these distinguished committees to discuss that aspect of Federal patent policy dealing with patent rights in inventions arising from federally supported research and development ("R & D"). My purpose in being here today is to present the views of Minnesota Mining and Manufacturing Company (3M)—a company with a reputation for innovation. Specifically, I will speak in support of legislation under which large

businesses performing Federal R & D retain title in inventions they make as is now the case with small businesses under the present law.

I am a patent lawyer with 38 years of experience in corporate patent practice, the last 24 years of which have been with 3M, where, since 1972, I have been its Chief Patent Counsel, managing an office with 35 patent lawyers.

3M was founded 79 years ago on the North Shore of Lake Superior. Like many new businesses, it struggled for many years just to stay in business. It was saved from floundering in its early days, however, by the inventions of "Three-M-Ite" coated abrasive and "Wetordry" sandpaper. And making inventions and patenting them have been an integral and prime part of our business ever since. Because we have made and exploited inventions, we have gone from adversity to diversity and have been able to satisfy the needs of our customers, provide jobs, and pay taxes.

Today, 3M is a large multi-national firm with almost 90,000 employees in the United States and 50 countries abroad. We are a diversified, highly integrated, worldwide manufacturer and distributor of high technology products in 45 major product lines based on a number of technologies. The most important 3M technology is probably precision coating and bonding, with applications in the manufacture of such diverse products as coated abrasives, photographic film, pressure sensitive tapes, and health care products.

Our total laboratory organization comprises many laboratories in the United States and abroad, employing more than 5000 men and women who, in their R & D endeavors, spent $283 million in 1980 (roughly 4.5 percent of 3M's $6 billion in annual sales) and over $1 billion in R & D over the last 5 years.

There are a number of ways to measure the effectiveness of research. One way is to measure the contribution of new products and businesses to annual sales: in 1980, new product sales compared favorably with our goal of generating 25 percent of sales from products introduced within the last 5 years. Another measure is the number of inventions: to protect its investment in R & D and its new products, 3M files about 200 to 300 patent applications in the United States each year.

The Federal Government spends tens of billions of dollars for R & D each year, an increasing portion being directed to defense needs. There are many thousands of contractors involved in this R & D effort. However, the dollar amount of 3M's federally funded R & D contracts, when compared to these billions of Federal funds and 3M's total sales, is very small: not more than 2 to 3 million dollars. 3M, like many if not most companies, does not depend upon fees from Federal R & D contracts for its income.

For the most part, potential contractors in industry are the high technology companies—companies that are often coveted by Government agencies for performance of federally funded R & D. But these companies are often the hardest to convince to take on such Government R & D work. In fact, 3M generally does not seek out but rather eschews Federal R & D contracts for several reasons.

One reason is because such contracting activity would deprive 3M of many of its degrees of freedom normally associated with a "supply and demand" marketplace. Under a Government R & D contract, 3M would have to comply with a form of control by the government, which decides what will be performed, how it will be performed, and for how much money.

Another reason is that the profit for performing Federal R & D contracts is usually in the nature of a fixed fee falling in a limited range of negotiability which generally does not equal the greater potential profit sought by 3M by the sale of new products derived from its own funded R & D programs.

These reasons for avoiding Federal R & D contracts may be overcome if the potential for a new product is great enough. Nevertheless, 3M is reluctant to take federally funded R & D contracts because they will tie up the company's primary or best qualified, productive research and development employees and equipment on work that will not generate profitable products protected by company-owned patents—the type that 3M hopes to sell. 3M does little Federal R & D work because of our concern with those provisions of Federal patent policy which withhold the full incentives of the patent system that 3M and many other companies rely on to protect their business. Specifically, I am speaking about those provisions of the present law which deny large businesses the ownership in patents covering inventions they make as contractors under Federal R & D contracts.

The standard patent clauses of the governing statutes or regulations of many of the various Federal agencies require contractors to give title to the Government to inventions made under the Federal R & D contracts. Such standard clauses would deprive 3M of the intellectual property rights that it depends on and which normally accrue to it from its privately funded R & D operations. Thus, such standard patent clauses are usually repugnant to 3M.

If the subject matter of a Federal R & D contract relates to a business area where 3M has expended its own funds, and the performance of the contract portends expansion by 3M of that business area, 3M will seek to have such patent clauses modified to give 3M greater patent rights than the agencies normally grant (and are accustomed to granting). Specifically, 3M will seek title to inventions made by it under the contract. In a few instances this can be negotiated favorable to 3M because of the permissible waiver of the title policy by certain agencies. But, without title to 3M in such inventions, 3M invariably will decline such contracts.

There have been exceptions to this 3M practice: Cases where 3M in taking Federal R & D contracts has acted in the role of a corporate citizen and accommodated a number of Federal agencies pursuing classified R & D work related to national defense, and cases where the particular subject matter of a contract was not a significant threat to 3M's pre-established, self-funded position in some area of 3M technology.

In these cases, 3M's mode of negotiating patent clauses is somewhat flexible, on a case-by-case basis, and chiefly dependent on the subject matter of the contract. Even so, whether or not 3M is to retain title to inventions made by it under the Government contract has an important bearing on whether it enters such a contract.

The title policy can also have some effect on the career and recognition of a contractor's research people, since their success and recognition with a high-technology company is often linked directly to profit, and profit is often linked directly to new products covered by patents owned by the company. When large firms enter into Federal R & D contracts based on the present title policy, their inventor-employees who are assigned to such contracts may be less motivated or not encouraged to invent, or even exert a superior effort, knowing their inventions are destined for Government ownerhsip and will probably languish as noncommercialized inventions.

Large firms, like 3M, which have specialized skills and background and prior investment in technology of interest to the Government, and which depend on the incentives of the patent system, will thus continue to shy away from contracts based on the title policy of the Government. Government R & D contracts divert their normal mode of enterprise. Foreclosing their title to inventions they make under the contracts may be just enough to turn them off completely. Perhaps only those firms which are driven by economic necessity, or which perhaps are less qualified to perform the R & D efforts of interest to the Federal agency, will take such contracts. Such title policy contracts will continue to inhibit innovation (already in decline in many sectors of industry) and interfere with or limit the commercialization of technology and the transfer of its benefits to the public. Also, the government will unfortunately continue to lose the best chance of success for many of its R & D programs.

3M, and we believe industry in general, supports legislation which in a sense extends the title feature of Public Law 96-517, "The Patent and Trademark Amendment of 1980", to large business as well as small business the incentive of invention ownership, that is, a first right of refusal to title in inventions it makes in performance of Federal R & D contracts.

Giving universities, nonprofit organizations, and small businesses such rights, though laudable in itself, is not an adequate means for the Government to increase participation in federally funded R & D by large firms, like 3M, with a wealth of R & D skill, experties, and resources built up over many years by seasoned scientific teams on a scale not enjoyed by small businesses and universities. Unless the title feature of Public Law 96-517 is extended to businesses without discriminating as to their size and tax status, 3M and many other large firms will continue to refuse to contract with Federal agencies which follow the title policy or will continue to contract with them on a limited scale. We believe this practice just is not in the public interest of the Nation as a whole.

A law such as Public Law 96-517 does not help to sufficiently promote the utilization of inventions arising from Federal R & D contracts, or encourage participation in such contracts, or promote commercialization of such inventions, because large businesses are omitted in such law. Though some Federal agencies under their present regulations may give title to such inventions to large business contractors under some circumstances, those agencies may read into this omission of the law as intent by Congress that large firms should be precluded from obtaining title to such inventions under any circumstances.

The rationale and incentives of the title feature of Public Law 96-517 logically should be no less applicable in the case of big business—they should not be discriminated against with respect to Government patent policy. The full benefits of the incentives of the patent system should be made available to all contractors when they undertake federally funded R & D contracts.

Finally, I would like to make a comment about the recoupment or "payback" provisions that might be included in Federal patent legislation. 3M is not in support of such payback provisions—they would also act as a disincentive to enter into Federal R & D contracts for many of the same reasons I've described why the title policy is a disincentive.

Mr. Chairman, I sincerely appreciate this opportunity to present these comments.

SUPPLEMENTAL STATEMENT OF CRUZAN ALEXANDER, CHIEF PATENT COUNSEL, MINNESOTA MINING AND MANUFACTURING CO.

Described below are suggested modifications to the Staff Working Draft, dated September 15, 1981, of the Senate Bill, S. 1657. Most of these modifications are technical but a few are substantive and very important.

With respect to substantive modifications: Sec. 103(8) should be modified as a matter of fairness by changing the word "or" in line 3 to—and—so that only those inventions conceived and first actually reduced to practice during the contract are considered made under the contract. Those inventions which were conceived prior to the contract are the property of the contractor and should not be included. Those inventions not actually reduced to practice with Government money should also not be included.

Sec. 301(c)(1) should be modified to read:—(1) require periodic reports, at reasonable intervals, of efforts made by the contractor or its licensees or assignees to bring the invention to the point of practical application; provided, . . .; and—. Reporting requirements should be limited to a showing whether "practical application" of the invention has been made; the definition of "practical application" does not require any minimum sales, or minimum output, etc., after commercialization has been effected; it requires only "manufacture", "practice" or "operation" and the benefits made available to the public. Price list and product brochures or availability of license should be all that is required. Continual reporting of the size of the business and other confidential business information would be a major deterrent.

Sec. 301(c)(2) should be modified to reserve to the Government a license to "make and use" but not "sell" in competition with private enterprise. The Government should not be permitted to sell to the private sector. If this were so it would be a great deterrent.

Sec. 302(b) should be modified to permit the contractor to reserve an irrevocable license, so that the contractor can preserve his investment already made and to continue to work off that investment in the future such as in the case where he has already started to commercialize but not to the extent to satisfy the contracting agency.—parenthentical reference to such reserved license should be made in Sec. 304(a) after the first occurrence of "license" and in Sec. 307(a) after the first occurrence of "licenses".

Sec. 304(a) should be modified by deleting "grant or" at line 5 of page 13 because it is the contractor who has title to the licenses referred to and thus the contractor owner can only grant licenses. The Government has no rights which would legally entitle it to grant licenses.

With respect to the technical modification in general: Secs. 101 and 102 appear to be far broader in scope than necessary and the various references to results (instead of "inventions") should be restricted to inventions made under federally sponsored research and development contracts.

Sec. 103 should not include unnecessary definitions and the definitions that are included should be the same as or consistent with those used for many years in related acts and regulations promulgated by various federal agencies thereunder;

In Title III (Secs. 301-307) detail should be ommitted that under related acts has been customarily left to regulations promulgated by agencies.

The details of the above changes are set forth in a marked up copy of the Senate bill which has already been provided to the Senate Committee.

Senator SCHMITT. Thank you, Mr. Alexander.

Now because we are conducting a joint hearing, I'll pass the official gavel and chairmanship over to Congressman Ertel.

Mr. ERTEL [presiding]. Thank you, Mr. Chairman.

I think at this time it would be appropriate to hear from Mr. Socolar, and then we will have questions.

Mr. SOCOLAR. Thank you, Mr. Chairman. If you will insert my complete statement into the record, I think I can summarize the key points that I would like to make this morning.

The General Accounting Office generally specifies four conditions for a good patent policy for the Government: that the Government contain control of inventions where national security is involved; and to insure public potential hazards such as radioactive pollution; that the Government be assured of royalty-free use of any and all patents deriving from Government-funded research and development; that the Government have march-in rights to withdraw and assign a license elsewhere if the contractor were not pursuing commercial development; and that if the Government might decide that granting exclusive rights to an invention to one contractor gives that contractor unfair monopolistic advantage, that the Government have the right to require the contractor to license competitors at a reasonable royalty rate.

There is common agreement that a successful patent policy should encourage commercial utilization of Government-sponsored inventions, encourage active participation of private contractors in bidding for and performing Government research and development, promote full disclosure of all contractor inventions to sponsoring Federal agencies, result in reduced administrative costs as a consequence of management of patent rights by both the Government and its contractors, and safeguard against unfair monopolistic advantages to individual firms. These five policy objectives serve as a backdrop against which to examine the current initiatives for reform.

S. 1657 and H.R. 4564 both have three primary provisions. They would establish organizations to coordinate, direct and review the implementation and administration and oversight of the acts. They would establish a general Governmentwide policy with specific exceptions for allocation to the private sector of title to inventions made or first reduced to practice under Federal funding support, and they would authorize Federal agencies to grant exclusive or nonexclusive licenses in any invention to which the Government has acquired title. It is clear that these provisions will have a positive influence on at least the first three policy objectives I have mentioned.

Commercial utilization of Government-sponsored inventions, the first of these objectives, is likely to be fostered with passage of this proposed legislation by contractors having an opportunity to obtain title or exclusive licenses to inventions made under Federal support.

The second objective, active participation of private contractors in bidding for and performing Government research and development, is also likely to be enhanced on the basis of rights to title to any inventions that may accrue during Federal support. Firms that have not bid for Government contracts because of perceived adverse patent policy may now be encouraged to do so. The benefits to firms accruing from the changes in patent policy proposed by this legislation could be quite valuable in particular instances.

Full disclosure of all contractor inventions to sponsoring Federal agencies, the third objective of patent policy, should also be encouraged by these bills because contractors will have assurance that

they will be able to retain exclusive licenses or rights to inventions disclosed.

While the proposed legislation is likely to have positive influence on the first three objectives of the patent policy, its impact on the fourth and fifth objectives is less clear. Precise outcomes are difficult to predict. Patent policy considerations are complex. There is a decided lack of data and other information against which to weigh legislative options.

With regard to the fourth objective of reducing administrative costs, I would point out that although administrative problems in the handling of individual patent determinations will doubtless be lessened, certain of the bills' provisions have the potential for imposing substantial amounts of administrative paperwork, reporting, and recordkeeping requirements on both the Federal Government and on contractors.

For example, the bills would require contractors to record and report on their intentions, options, patenting and commercialization of subject inventions. It would also require agencies to acquire these data from contractors and to make determinations on titles, license, rights, and waivers. Many of these duties are not now regularly required of either agencies or contractors.

As to the fifth and final objective of patent policy, safeguarding against unfair monopolistic advantages to individual firms, I would say that reasonable safeguards lie in the march-in provisions of the bills, the antitrust law protections available and the specific exceptions to private ownership of patents spelled out in the bills.

The House and Senate versions of the legislation, although similar in prose and objectives, do employ different strategies for implementation. In the House version, the Federal Coordinating Council for Science, Engineering, and Technology would be designated responsibility for general planning, policy review, and reporting activities. The Department of Commerce would be charged with the more operational aspects of implementation. In the Senate version of the bill, both functions would be lodged in the Department of Commerce.

It is my view that in separating the general policy and analysis activities from the more operational aspects of implementation, the House version is preferable. The Coordinating Council and predecessor organizations have performed similar overview and reporting duties in the past, and the Department of Commerce is experienced in managing and promoting utilization of patents. To assign complete responsibility for implementation and oversight to a single operating agency, requiring it to monitor its own activities along with those of other agencies, would not in my view be desirable.

Finally, there is a provision in each bill authorizing the use of fees collected for purposes of the act. I would suggest in the interest of straightforward budgeting that any fees collected should go to the Treasury as miscellaneous receipts.

In summary, the proposed legislation being considered here today is an important step toward accomplishing some important objectives of good patent policy. GAO supports your committee's efforts to promote a uniform, Governmentwide patent policy, and I

will be happy to answer any questions that you may have at this time.

[The statement follows:]

STATEMENT OF MILTON J. SOCOLAR, ACTING COMPTROLLER GENERAL, GENERAL ACCOUNTING OFFICE

Mr. Chairmen and members, we are pleased to appear today before this joint hearing to comment on proposed legislation to establish a Governmentwide, uniform policy on title to inventions arising from Government-funded research and development activities. The passage of Public Law 96-517 in December 1980 was an important first step in this direction.

BACKGROUND OF PATENT POLICY DEBATE

GAO's views regarding U.S. patent policy result from work in support of the Commission on Government Procurement. In 1972, the Commission—which included the Comptroller General as one of its members—recommended the enactment of clear-cut statutory authority for agencies to issue exclusive licenses. It also called for legislation allowing commercial rights in inventions to be granted to developing contractors or inventors subject to a strengthened system of "march-in" rights under the administration of a central board.[1]

In 1976, GAO testified before the Subcommittee on Domestic and International Scientific Planning and Analysis of the House Committee on Science and Technology. At that time, there were still wide variations in how agencies handled title to inventions arising from Government-funded work, and we recommended that the Government adopt a general policy to grant exclusive licensing of inventions derived from Government-funded research and development to private enterprise for commercial purposes.

GAO specified four conditions for this general policy:

(1) That the Government retain control of inventions where national security was involved and to insure public protection against potential hazards (such as radioactive pollution);

(2) that the Government be assured of royalty-free use of any and all patents deriving from Government-funded research and development;

(3) that the Government have march-in rights to withdraw and assign a license elsewhere if a contractor were not pursuing commercial development; and

(4) that if the Government might decide that granting exclusive rights to an invention to one contractor gives that contractor unfair monopolistic advantage, the Government have the right to require the contractor to license competitors at a reasonable royalty rate.

In May 1979, GAO testified before the Senate Committee on the Judiciary in support of the more uniform patent policy proposed by "The University and Small Business Patent Procedures Act." GAO supported this legislation but pointed out that it fell short in that it dealt only with patent rights for nonprofit organizations and small businesses.

THE OBJECTIVES OF MODERN PATENT POLICY

There is common agreement that a successful patent policy would: Encourage commercial utilization of Government-sponsored inventions; encourage active participation of private contractors in bidding for and performing Government research and development; promote full disclosure of all contractor inventions to sponsoring Federal agencies; result in reduced administrative costs as a consequence of management of patent rights by both the Government and its contractors; and safeguard against unfair monopolistic advantages to individual firms.

These five policy objectives serve as a backdrop against which to examine the current initiatives for reform.

S. 1657 AND H.R. 4564

These bills both have three primary provisions. They would establish organizations to coordinate, direct and review the implementation, administration and oversight of the Acts. They would establish a general Government-wide policy with

[1] Report of the Commission on Government Procurement (Washington, D.C.: U.S. Government Printing Office, December 1972), vol. 4.

specific exceptions for allocation to the private sector of title to inventions made or first reduced to practice under Federal funding support. And, they would authorize Federal agencies to grant exclusive or nonexclusive licenses in any invention to which the Government has acquired title. It is clear that these provisions will have a positive influence on at least the first three policy objectives mentioned.

Commercial utilization of Government-sponsored inventions—the first of these objectives—is likely to be fostered with passage of this proposed legislation by contractors having an opportunity to obtain title or exclusive licenses to inventions made under Federal support. Studies have discussed the importance of "patent rights . . . to protect a user's investment in bringing inventions to market."[2] The exact size of the potential benefit from vesting patent rights with contractors is difficult to estimate. We know, however, that benefits to the economy are potentially large if this legislation does in fact stimulate increased commercial utilization of the results of Government-financed research.

The second objective, active participation of private contractors in bidding for and performing Government research and development, is likely to be enhanced on the basis of rights to title to any inventions that may accrue during Federal support. Firms that have not bid for Government contracts because of perceived adverse patent policy may now be encouraged to do so. The benefits to firms accruing from the changes in patent policy proposed by this legislation could be quite valuable in particular instances.

Full disclosure of all contractor inventions to sponsoring Federal agencies, the third objective of patent policy, should also be encouraged by these bills, because contractors will have assurance that they will be able to retain exclusive licenses or rights to inventions disclosed.

While this proposed legislation is likely to have positive influence on these first three objectives of patent policy, its impact on the fourth and fifth objectives is less clear. Precise outcomes are difficult to predict. Patent policy considerations are complex and there is a decided lack of data and other information against which to weigh legislative options.

With regard to the fourth objective of reducing administrative costs, I would point out that although administrative problems in the handling of individual patent determinations will doubtless be lessened, certain of the bills' provisions have the potential for imposing substantial amounts of administrative, paperwork, reporting and recordkeeping requirements on both the Federal Government and on contractors. For example, the bills would require contractors to record and report on their intentions, options, patenting, and commercialization of subject inventions. They would also require agencies to acquire these data from contractors and to make determinations on titles, licenses, rights and waivers. Many of these duties are not now regularly required of either agencies or contractors.

As to the fifth and final objective of patent policy—safeguarding against unfair monopolistic advantages to individual firms—I would say that reasonable safeguards lie in the march-in provisions of the bills, the antitrust law protections available, and the specific exceptions to private ownership of patents spelled out.

The House and Senate versions of the legislation, although similar in purpose and objectives, do employ different strategies for implementation.

In the House version, the Federal Coordinating Council for Science, Engineering, and Technology would be designated responsibility for general planning, policy, review, and reporting activities; the Department of Commerce would be charged with the more operational aspects of implementation. In the Senate version of the bill, both functions would be lodged in the Department of Commerce.

It is my view that in separating the general policy and analysis activities from the more operational aspects of implementation, the House version is preferable. The Coordinating Council and predecessor organizations have performed similar overview and reporting duties in the past. And the Department of Commerce is experienced in managing and promoting utilization of patents. To assign complete responsiblity for implementation and oversight to a single operating agency requiring it to monitor its own activities along with those of other agencies would not be desirable.

Finally, there is a provision in each bill authorizing the use of fees collected for purposes of the act. I would suggest, in the interest of straightforward budgeting, that any fees collected should go to the Treasury as miscellaneous receipts.

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[2] See Harbridge House, Inc., *Government Patent Policy Study*, Contract No. 7-35087 (Washington, D.C.: Federal Council for Science and Technology, May 1968), final report, vol. I, p. iv.

SUMMARY

In summary, the proposed legislation we are considering here today is an important step toward accomplishing some important objectives of good patent policy. GAO supports your Committee efforts to promote a uniform, Government-wide patent policy. I will be happy to answer any questions you may have at this time.

Mr. ERTEL. Thank you very much for your statement, Mr. Socolar. We certainly appreciate that thoughtful and helpful presentation.

At this point, we recognize Senator Schmitt for 5 minutes.

Senator SCHMITT. Thank you, Mr. Chairman.

Mr. Alexander, in your testimony, you say that 3M does not pursue R. & D. contracts as a matter of course. If a change in patent policy would come about, under consideration in these two bills, do you think more companies such as yours might enter into competition for such contracts, recognizing your reservations?

Mr. ALEXANDER. Yes, I definitely do. I think 3M would be more interested, and I think many other companies of a similar nature to 3M would be more interested. It's compatible with our business pattern to have title; that's what's so important.

Senator SCHMITT. Does the ability of your company to commercialize inventions of your research and development operation have any influence on employees and their motivation?

Mr. ALEXANDER. I'm not quite sure what you mean.

Senator SCHMITT. Do your employees in your R. & D. area ever think about whether something that they work on might be commercialized? Is that a motivational incentive?

Mr. ALEXANDER. It's a primary motivation, because they know that the products that we put out, should be patented in order to keep our profit margins and our growth objective. It's very, very important. We expect all of our technical employees to be inventors.

Senator SCHMITT. Do you have a stock-sharing plan with your employees?

Mr. ALEXANDER. Yes, we have a stock-sharing plan and a profit-sharing plan.

Senator SCHMITT. So your employees would be quite aware of the patent situation?

Mr. ALEXANDER. Very much aware of it.

Senator SCHMITT. Interesting. You have indicated an objection to the recoupment mechanism suggested. Can you tell us approximately how much your company pays in corporate taxes to the Government on inventions that have been developed internally? Is there any possible way to measure that?

Mr. ALEXANDER. Yes, there's a possible way. I can't give you the figure right at the moment but I might be able to calculate it. Approximately 60 percent of our products that we sell today are covered by patents. So if you take 60 percent of our sales, which is $6 billion, that's $3 or $4 billion, and you take a 25-percent profit from that, which is $1 billion, say, that's approximately what the tax would be on patented products.

Mr. ERTEL. Would the gentleman yield?

I think you probably pay about half of that.

Mr. ALEXANDER. Half of that, right. $500 million. It's still a little high.

Senator SCHMITT. On an annual basis?

Mr. ALEXANDER. Yes.

Senator SCHMITT. Do you, Mr. Alexander, agree that the costs of bringing an invention to commercialization are much higher in the development phase than in the research and technology phase?

Mr. ALEXANDER. Definitely. You might spend $200,000 on research, but the development—which includes the building of a plant, the marketing, test marketing, and so forth—might cost you $10 million or $100 million—many, many times the figure for the cost of research. And there is a great risk in that, too. That is where the real risk is, in cost of development and commercializing the product.

Senator SCHMITT. Congressman, you might be interested in the situation that's developed in New Mexico that will be the subject of one of the major sessions of the Showcase for Technology, that the laboratories and universities of New Mexico are sponsoring in late October—that is, the problem of taking Government-sponsored technology and moving it past the prototype stage into something that may be commercialized. It does illustrate, I think, one of the problems we have.

The best example so far, the current example, is the development of an insulin pump—in effect, an artificial pancreas for treating diabetics by giving a controlled release rather than an injection. This insulin pump has been developed largely from components taken out of the weapons program, particularly out of the safeguards that are being built into the modern weapons to prevent tampering. But the individual components, valves and the like, have been integrated into an insulin pump. But none of these components have any patents on them or at least are not patentable because of the amount of publication that has occurred. There's never been any incentive to get patents on them because there was never any belief that there would be a value to those patents in the private sector.

So what we're faced with now is that we have a prototype, one of which is now implanted in a human subject, two of which are implanted in canine subjects, but we can't find the resources to take the next step—that is, get this prototype down to something that can be commercialized and would be available to the 1½ million diabetics in this country who might have a use for this instrument, and for millions more worldwide. And it's exactly this problem.

One of the bottlenecks is that there is nothing that we can attract commercial interest to because there's nothing that's patentable because that was not thought of as we developed the prototype.

Thank you for yielding on that. It's just another illustration of the problem we face in bringing federally sponsored technology into the marketplace.

Mr. ERTEL. I think that probably would be satisfied in many respects by this bill, because the person would get the title and later would be able to patent it if he had a commercially usable idea.

Senator SCHMITT. I don't think there's any question that this legislation would have prevented at least part of that problem from ever having occurred.

Mr. ERTEL. This is certainly a good illustration. I've heard about your showcase in other testimony. I just might have to take a trip to New Mexico to see that. I understand it's going to be an excellent display.

Senator SCHMITT. I hope you will. We're very excited about it. This issue will be the subject of a major seminar at the showcase, plus there will be a demonstration of the insulin pump and of course many other aspects of technology as well.

Mr. ERTEL. I'm about to steal your idea of the showcase. We just don't think that the Southwest ought to get everything. We're going to hold one in Pennsylvania.

Senator SCHMITT. Please do. We'll help and advise you on how we went about it.

Mr. ERTEL. Thank you.

Mr. Shamansky?

Mr. SHAMANSKY. Thank you, Mr. Chairman.

Mr. Alexander, you strike me as an eminently sensible man, and I can understand that as a representative of Minnesota Mining & Manufacturing Co. that you wouldn't want recoupment, clearly.

Mr. ALEXANDER. Yes.

Mr. SHAMANSKY. Unfortunately I'm not a stockholder of 3M; if I were, I'd probably be convinced by whatever you have to say, but I am a Congressman and a nonstockholder. Given the present political climate of no entitlements, and recognizing now that there is such a thing as a user fee for the private sector of Government facilities, why is it that 3M should be able to use Federal money, get the patent, and then say, "Don't give it back; don't pay the cost back"?

Mr. ALEXANDER. I think Mr. Mossinghoff answered that pretty well.

Mr. SHAMANSKY. Unfortunately, I can't be at two hearings at the same time. What's your answer?

Mr. ALEXANDER. My answer is similar to his. The Government got exactly what it paid for. It asked 3M, for example, to solve a problem. It solved the problem, and they have the right to exclusively use that solution in Government. They paid for what they got. This is not unusual in the private sector where you have asked somebody to do work for you.

Mr. SHAMANSKY. Excuse me. It really does seem to me you're assuming your conclusion. If the terms were, you get paid for what you're doing, we're not talking about the private sector being paid by the Government for doing the work. You do the work. You know, you can define it as saying, well, once you've done the work and gotten the patent, you've gotten something, too; right?

Mr. ALEXANDER. I think there's one error in your statement. The Government does not pay for everything that it gets. There's many, many years of experience in the background and organization and teams that are made available to the Government for this research work, and they don't pay for that.

Mr. SHAMANSKY. Certainly that recoupment of whatever you put in, that's one of your costs of doing business. You're certainly

getting a return on your costs, however you legitimately figure costs. You amortize your equipment; you pay your expenses; and you have your debt serviced.

Mr. ALEXANDER. If you had to take the cost of that research out of the product that you're selling, then you're going to have even less of an amount of return. That's another reason. It's a deterrent.

Mr. SHAMANSKY. Clearly anything that you have to pay back is a deterrent. You can go to the private market and borrow money to do some work and you pay it back. That's a deterrent, as contrasted to never having to pay it back. Certainly, that's true. But how does that really differ from the private acquisition of capital for which you have to pay?

Mr. ALEXANDER. In the private sector, if we went out and got some research work done, say 3M went—and we had some activity very recently on this—and asked a specialized company to solve a problem for us—they were experts in areas where we were not—the very first thing they said is, "We get title to the inventions that are made. Now you may get a license to use it for what you asked us to do." But their argument was just exactly, I say, "There is a lot of expertise in the development, and you aren't going to get the answer anywhere else."

Mr. SHAMANSKY. So you're suggesting that never in a contract would you get paid back.

Mr. ALEXANDER. I don't know of any situation other than through your own efforts to sell the product or whatever it is, yes.

Mr. SHAMANSKY. So nowhere in private industry is there a history of engaging a research firm to do some original work for you and you pay them? Also, if they have a moneymaking profit out of it, or if they have a patent then, that money is never gotten back?

Mr. ALEXANDER. I don't know of any such situations like that. There may be; there are always exceptions to everything. I'm trying to think of some, and I can't.

In the Battelle situation, why you buy research from them, but you don't get title to the patents unless you pay an extra fee. There is no recoupment in those instances.

Mr. SHAMANSKY. Thank you.

Mr. ERTEL. Thank you very much, Mr. Shamansky.

I am intrigued by part of your argument, Mr. Alexander, that you basically pay Federal taxes. We went through that exercise here. You pay $450 million. Therefore, what you're really saying is, that's the basic repayment to the Federal Government for the funds that they may put out to you to do some research and development, however, you get the patents. If that's true, then the argument gets carried too far. Everybody pays taxes; therefore we should be able to give money to everybody for any research and development they want to get, or any other product, for that matter. That just flies in the face of commonsense and it goes too far.

Mr. ALEXANDER. You made a statement there that you're giving money. I don't think you are giving money. You got what you paid for. You bought a car; you got a car.

Mr. ERTEL. But we're defining the contract. And I think Mr. Shamansky's right. We're defining the contract, and what we're saying to you is, we're going to give you a certain amount of profit.

We're going to pay your expenses basically, plus 10 percent or 20 percent or whatever the profit is. So the question is defining the contract—what do we get back and what do you get? That's really what the issue is.

You assume the answer by saying, "We get the patent, and you get everything you want."

Mr. ALEXANDER. Outside of what the Government uses, we should be free to do what we want with it. That's the normal way we run our business. If we're going to have recoupment, I don't think it's fair. I think the Government paid for what it got, and I see nothing to recoup.

Mr. ERTEL. The Government might have paid not only for the research and development you did, but also for the patents you developed as a result of that research and development. I mean, there's a question of how you define the contract here.

Mr. ALEXANDER. It's like any negotiation. You negotiate everything into it that you think is necessary for your purpose. I don't see any reason for putting into a law all these negotiating parameters that you have. That's one reason why the law is being changed so that the Government can grant title. It permits the agency to negotiate like any other private party would negotiate. It can negotiate title if it wants to; if it can get the contract and retain title, then it should negotiate that. It's the same with everything. It should negotiate recoupment if it can do it, but why put it into the law? It's just one more deterrent to companies like ourselves. They have been trying for years to do a lot of Government research work, and we've been reluctant to do that because of the strings attached.

Mr. ERTEL. Maybe I will ask Mr. Socolar what the position of the GAO is on this. As I understand your testimony, you didn't address the issue.

Mr. SOCOLAR. It seems to me that in some kind of absolute sense, that there is a bit of a dilemma. There are arguments on both sides. But my own view would start with the consideration of where we are now in terms of how much recoupment is actually occurring under the present state of affairs and also where we're trying to get.

It seems to me that one of the places that we are trying to get is to encourage private participation in Government research and development and that to the extent that recoupment deters that encouragement and to the extent that that recoupment introduces a whole host of administrative problems, weighing the arguments on both sides, my feeling is that the balance should be thrown in favor of nonrecoupment as being more in line with the general aims of moving forward with a uniform patent policy to begin with.

Mr. ERTEL. I must admit that that argument is more attractive to me than the idea that we're going to pay taxes back and I think we're entitled to this. I think you're trying to solve the policy objective.

Mr. SOCOLAR. It's not really proffered as an argument as much as a point of view.

Mr. ERTEL. I certainly thank both of you for your testimony.

Senator Schmitt, do you have any further questions of these gentlemen?

Senator SCHMITT. Just that I'd like, Mr. Socolar, to have the staff follow up with you or your staff to look at specifics in the bills where you think there are unnecessary requirements that raise the burden of administrative overhead that we might eliminate, but without losing any of the safeguards which I think we all feel should be included in the bill.

Mr. SOCOLAR. We could certainly do that. I'm not sure even at this point that there is much that we would be able to do away with in terms of administrative requirements. In my statement, I pointed out that on the one hand, in dealing with individual contractors, the administrative process in doing that would certainly be lessened by these bills, but at the same time I think that it is necessary to introduce some of these other administrative requirements that are not now required. I think that's just the price that one has to pay in terms of accomplishing the overall objectives.

We do have to monitor. We do have to keep track of what's occurring. And my own sense would be that that's not an undue burden—again, in terms of the overall policy.

Senator SCHMITT. Thank you, Mr. Chairman. I enjoyed working with you today and look forward to meeting with you on your side.

Mr. ERTEL. Thank you very much. I appreciate being with you, Senator Schmitt.

The committee stands adjourned.

[Whereupon, at 11:55 a.m., the hearing was adjourned.]

ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

STATEMENT OF HON. MARGARET M. HECKLER, U.S. REPRESENTATIVE FROM MASSACHUSETTS

Mr. Chairman, this joint hearing today should provide us with numerous insights for our consideration of Federal patent policy. We have before us a distinguished and knowledgeable group of witnesses testifying, and I look forward to hearing from them.

The patent bills introduced by Mr. Ertel and Mr. Schmitt have many factors to consider. Both bills are aimed at improving the present Federal patent policy. An improved patent policy can spur innovation and productivity as well as increase competition. As I see it, the thrust of both bills, H.R. 4564 and S. 1657, is that title to inventions conceived under Federal contracts should in most cases remain with the contractor.

There are several facets of these bills that need more consideration. A few of these facets are recoupment, march-in rights, the managing agency, and judicial review.

The need for an improved Federal patent policy is quite apparent. Only 4 percent of 27,000 to 30,000 patents held by the Government have been licensed for development. The value of research and development is lost if inventions cannot be commercialized. We need to formulate Federal patent policy in such a way that the taxpayer will benefit from research and develoment activities. A greater incentive must be provided for contractors to engage in research and development.

For over a decade the Federal Government has been financing an average of about 50 percent of the Nation's entire expenditure for research and development. To promote the commercialization of inventions created under Government contracts we must improve upon our existing patent policy. There has been a shrinking percentage of world patents being granted to Americans. In an effort to stay at the leading edge of technology worldwide we must reexamine our Federal patent policy. I feel that the Ertel and Schmitt bills are steps in the right direction.

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.,
Washington, D.C., October 21, 1981.

Hon. HARRISON SCHMITT,
U.S. Senate,
Washington, D.C.

DEAR SENATOR SCHMITT: The Aerospace Industries Association of America, Inc., has on previous occasions communicated with you on the matter of establishing a Federal Patent Policy. We stated strong support for legislation under which a contractor would retain title to inventions made in the performance of research and development under government contract. Accordingly, we have strongly supported previous legislation introduced by you which would effectuate that policy and we now support S. 1657.

We would respectfully suggest, however, some revisions in the wording of S. 1657. These are as follows:

In section 302(b), line 16—after "Section 301" add—or Section 302—. Reason: We believe that, in equity, a contractor should retain a non-exclusive, royalty-free license under any invention to which the government takes title under not only Section 301 but also Section 302.

As you know, Congressman Ertel has introduced H.R. 4564, which, like S. 1657, would authorize contractors to retain title to inventions made in the performance of research and development under government contracts. The Ertel bill also contains provisions for judicial review (Section 306). We believe that S. 1657 would be improved by adding similar provisions to it.

We would appreciate it if this letter could be included in the record of the recent hearings on S. 1657.

In view of the similarity of S. 1657 and H.R. 4564, we have enclosed a copy of our letter to Congressman Ertel commenting on H.R. 4564.

If there is any way that we can be of further assistance in this matter, please feel free to call upon us.

Yours very truly,

KARL G. HARR, Jr.

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